THE AMERICAN

GAS-LIGHT JOURNAL

Devoted to Gas, Light, Water Supply, Mining, Petroleum, and Scientific Subjects.

PUBLISHING OFFICE, No. 22 PINE STREET.

VOLUME X—No. 1.
WHOLE No. 209

NEW YORK, THURSDAY, JULY 2, 1868.

$3 PER ANNUM
IN ADVANCE.

Isbell's Patent Vibrating Piston Engine.

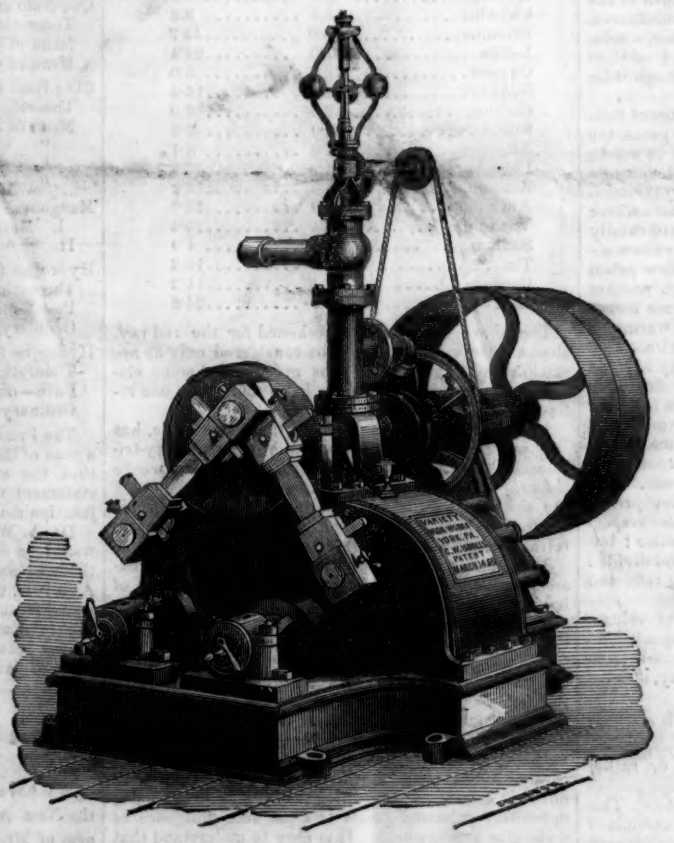
This valuable improvement was illustrated in the last number of this Journal. The accompanying engraving will give so correct an idea of its construction and operation, as to make a detailed description superfluous to the intelligent reader.

The peculiar features of this engine are that, being a double engine it has no dead points and requires no fly-wheel. When one piston is at the end of the stroke the other is exerting its greatest power with a full head of steam. The motion of the piston is vibratory, and there being two, connected to the same crank pin by the simple device shown, it causes the motion to be perfectly uniform and regular.

The friction of moving parts is reduced to a minimum, consequently the engine is durable and will require but little attention or repair.

As before stated, it is claimed this engine is lighter and occupies less room than any other engine having equal power. The parts are few, and being complete on one bed plate, gives it remarkable strength and stability. The compactness, simplicity, and durability of this engine, together with its unique but pleasing symmetry of form, will recommend it to all who study the merits of it, and their own interests at the same time. These engines are giving entire satisfaction it is said, to those who have them in operation.

For terms and other particulars, address the proprietors, Smith & Sayre Manufacturing Company, No. 95 Liberty street, New York City.



ISBELL'S PATENT VIBRATING PISTON ENGINE.

Oxygen.

This is by far the most abundant element in nature, and in its gaseous state forms more than one-fifth part of the atmosphere by which our earth is surrounded. As a liquid, in union with hydrogen, it constitutes by weight eight ninths of all water; as a solid it is a portion of innumerable organic and inorganic bodies; and is estimated to form about one-third of the mineral crust of our globe.

Oxygen, when free, that is, when uncombined with any other element, exists only as a gas (all attempts to reduce it to a fluid having failed); and this occurs either when it is emitted by the leaves of plants, etc., or when by the agency of man it is separated from other elements with which nature has caused it to combine, and form certain compounds or substances. This element is the support of all animal life and combustion, and possesses very peculiar properties; for instance, a body which burns in air, when it is immersed in oxygen gas burns with vastly increased splendor; and the wick of a recently extinguished candle, having the least part red-hot, when inserted into a jar of this gas is immediately relighted; and a piece of charcoal with the smallest point ignited, when so treated burns with great brilliancy.

Oxygen gas is inodorous, colorless, and rather heavier than air; and it may be termed the aerial food of animal life, for at each respiration a portion of it, intermixed with nitrogen, is received into the lungs, acts on the blood, and is afterwards ejected as a poisonous compound, carbonic acid gas.

Oxygen, or any other natural element, can only be obtained from a compound which possesses it, and by adopting means to separate the required element from the compound. Thus, chlorate of potash, red oxide of mercury, and black oxide of manganese, in common with many other substances, contain a large quantity of oxygen, which is easily separated as a gas by means of heat.

For example, red oxide of mercury is a mixture of oxygen and quicksilver, in the form of a red powder; and if a few grains of this be placed in a test-tube and held over the flame of a lamp or gas-burner, the heat expels the oxygen as a colorless gas, leaving the quicksilver in its fluid state. This is decomposition, and was the means first employed to obtain oxygen by its discoverer.

But a more economical manner of obtaining this gas is by taking a quantity of black oxide of manganese (of which one pound will evolve about 1,400 cubic inches of oxygen), placing it in a cast-iron retort, and distilling similarly to the distillation of coal for the production of gas; the oxygen gas can be collected in a gas-holder, or other vessel, for use when required.* One ounce of chlorate of potash, by careful application of heat, will afford about two gallons of oxygen.—*Hughes on Gas Works.*

* As these experiments are attended with danger, the reader should not attempt them without having some instruction on the subject.

The Smoke Question.

Mr. G. Holt recently delivered a lecture upon this subject at the Literary Institute—says the London *Mining Journal*—in the course of which he spoke of one invention which he said "struck at the root of the evil," and was, "without question, the most thorough and scientific yet brought out for the consumption of smoke." The essential features of this invention are that the bars of the fire-place grate are sloping at an angle of 45°, and that the sides and back of the fireplace are also grated, supplying fresh air continually to the hottest part of the fire. The sloping grates admit of the slack being supplied by means of a hopper, so as to avoid the use of doors, and the slope of the bars causes the fire gradually to settle to the bottom as it becomes thoroughly heated, so that all the fresh coal is at the front, and any smoke from the front must pass over the main body of the fire. This scheme seeks to allow no waste carbon to escape as smoke, by admiting air through the fire. There are several collateral advantages with this scheme. The side bars are wider apart towards the bottom of the fire, so that by a better supply of air a greater heat may be obtained. The level portion of the fire-grate at the bottom is movable, and fitted with a lever, which causes it to slide in and out on rollers, so as to let out ashes, or, if need be, the whole of the fire into the ash-pit below. Again, the slope of the bars, and the gradual manner in which the slack settles down on the fire, enables it to cake together in masses, which keeps the bars unchoked, and thereby admit more air. Also, from having no doors to open and shut great injury to the boiler by the alternate cooling and heating of the boiler is avoided.

—Brigham Young has taken the contract for the grading of the Union Pacific Railroad from Echo Cañon to Salt Lake. Work is to be commenced at once.

On Some New Experiments on Light.

From the Proceedings of the Royal Institution of Great Britain, on Friday evening, April 24, 1868.

BY J. H. GLADSTONE, PH.D., F.R.S.

The speaker commenced by referring to the fact that we are constantly making new experiments or observations on light; in fact, all seeing is but a comparison of different degrees of light, and the contrast of colors. Most of the rays that meet our eyes from surrounding objects are reflected rays, but some of the commonest things, such as the water-bottles and tumblers of cut-glass on our dining tables, exhibit beautifully the bending, the magnifying, the diminishing, and the production of coloring fringes, due to refraction. The purpose of this discourse was to rise from the simplest phenomena of this kind to a consideration of refraction-equivalents, and to describe the state of our present knowledge in regard to them.

By means of the electric lamp it was shown that a piece of glass, or other transparent body, will throw a perfectly black shadow if the two surfaces through which the ray passes be not parallel; that the light is then bent on one side, and at the same time spread out into its component colors; that this bending (refraction) varies with the inclination of the two surfaces to one another, but in such a way that the sine of the angle of refraction bears a constant ratio to the sine of the angle of incidence; that this constant number, termed the index of refraction, or u, belongs only to the one substance, each solid, liquid, or gas, having its own index; that there is no necessary connection between the amount of refraction and the length of the spectrum (dispersion) caused by different substances, whether gaseous, liquid, or solid—for instance, a solution of an iodide always disperses more than a solution of the chloride of the same metal, even though it be diluted to the same amount of refraction.

This index of refraction is affected by change of temperature. In liquids, and probably in all gases, the bending decreases as the thermometer rises; in solids, on the contrary, as lately shown by Fizeau, the change is in the opposite direction, crown glass always remaining the same, and flour spar being the only case where he observed a diminution. This was experimentally demonstrated in regard to liquids. Thus a yellow sodium ray, which had passed through a hollow prism filled with oil of nutmeg, and thence through another filled with bisulphide of carbon, moved some inches along the screen, when the nutmeg oil was warmed a few degrees by stirring it with heated iron wire. This index of refraction is still more materially affected when a body passes from the solid to the liquid, or from the liquid to the gaseous condition; a fact that was illustrated by the visibility of the water melted in crystaline spaces in the middle of a block of ice.

The index of refraction of a mixture is moreover not always the mean of the indices of its constituents. Thus a ray passed successively through two hollow prisms filled with equal quantities of alcohol and water respectively, fell on the screen in a certain position; but when the two liquids were mixed together, and divided between the two prisms, the ray was visibly refracted to a greater distance.

These changes depend on the alterations of volume which the substances undergo; and the speaker, in conjunction with the Rev. T. P. Dale, had observed in liquids that the index of refraction, *minus* unity, divided by the density (in symbolic language $\frac{u-1}{d}$) is constant for all temperatures, and for all mixtures, or rather that the coincidence is very close but not quite perfect on account of some other law not yet understood. This conclusion has been abundantly verified by Landolt of Bonn, Ketteler, and Wullner, and the former experimenter has founded upon it a method of analysing mixtures of liquids.

This unchangeable number was termed the "specific refractive energy" of the substance, and it seemed to hold good notwithstanding a change from the solid to the liquid or the gaseous condition. It was early observed that the specific refractive energy of a compound bore a close resemblance to the mean of the specific refractive energies of its components. Landolt, by multiplying this number by the chemical equivalent, facilitated the calculation greatly. He termed this new number the "refraction-equivalent," P $\frac{u-1}{d}$, and proofs have rapidly accumulated that the number is little affected, not only by temperature, change of aggregate condition, mixture, or solution, but even by strong chemical combination.

Thus diamond, which is crystalised carbon, has the refraction-equivalent 5·0; sulphur has 16·0. Bisulphide of carbon, CS^2, which is nearly the most refractive liqnid known, should therefore be represented by 5 + 2 + 15, that is 37·0. The experimental number is 37·3. But the diamond will burn in oxygen, and is thus converted into carbonic anhydride, while it is possible to reduce this gas into another containing only half the omount of oxygen, namely, carbonic oxide. The refraction-equivalents of these gases, as deduced from Dulong's observations, are respectively 10·03 and 6·53; but the difference between CO^2 and CO is one equivalent of oxygen, and the difference between the above numbers is 2·5. This then may be taken as the refraction-equivalent of oxygen, and subtracting it from CO — 7·53 we have remaining C — 5·03, practically the same number as that obtained directly from crystalised carbon. Similarly, but generally by more indirect methods, it has been determined that this element, whether pure as diamond or combined with other elements to form gases as the above-mentioned, coal-gas, or cyanogen, or liquids as chloride of carbon, benzol, oil of turpentine, alcohol, or ether, or solids as paraffin, sugar, or camphor, is still exerting the same influence on the rays of light that set its particles in motion, an influence that we can express by the number 5·0. Again, to revert to sulphur, the two salts sulpho-cyanide and cyanide of potassium—K S Cy and K Cy—differ by one equivalent of this element, and their refraction-equivalents as determined from their aqueous solutions are respectively 33·4 and 17·1, numbers differing by 16·3, a number almost identical with that reckoned from molten sulphur. In this way the refraction-equivalents of a large number of the elements have been determined; and the following table comprises what seem the most probable numbers among those that have been hitherto published by Landolt, Haagen, and Schrauf, as well as the speaker:

	Atomic-weight.	Refraction-equivalent.
Hydrogen	1·0	1·3
Chlorine	35.5	9.8
Bromine	80·0	15.7
Iodine	127·0	24·4
Oxygen	16·0	3·0
Sulphur	32·0	16·0
Carbon	12·0	5·0
Silicium	28·0	6·2
Nitrogen	14·0	4·1
Phosphorous	31·0	18·5
Arsenic	75·0	16·0
Antimony	122·0	25·7
Vanadium	51·4	25·4
Sodium	23·0	4·9
Tin	118·0	19.2
Copper	63·4	11·2
Mercury	100·0	21·6

The above numbers are reckoned for the red ray. Most of them as yet claim to be considered only as approximative; and yet it seems certain that some elements, as oxygen and sulphur, have more than one refraction-equivalent.

Vanadium, though included in the above table, has only just been determined, and that from the oxy-trichloride which Professor Roscoe exhibited a few weeks before. It is interesting, as it supports his theory of the close analogy of phosphorous and vanadium, for these two bodies, with sulphur, exceed all others in refraction and especially in dispersion.

The speaker stated that he was now engaged in examining the effect of salts in solution on the rays of light, and that he hoped to determine in this way the refraction-equivalents not only of a multitude of salts, but of the metallic elements themselves.

But the question may be asked, "If a substance has a refraction compounded of the refraction of its constituents, how can bodies such as Iceland spar have two refractive indices?" Now these are crystalline bodies, or if uncrystallized they have become doubly refracting by being unequally heated or compressed. In either case we may suppose a different amount of tension in different directions; and the fact of the two rays being oppositely polarised points to some such difference of molecular arrangement. It is easy to understand that the change of tension or internal structure may act in the same way as a change of density in modifying the velocity of transmitted light, and therefore the amount of its refraction. But if we take the crystal to pieces by dissolving it, there can then no longer be unequal tension or unsymmetrical arrangement of particles, and it must have one refraction equivalent. And this is always the case. The numbers deduced from Brewster's observations of the two rays of crystallised nitre are 16·3 and 25·0, while the equivalent of nitre dissolved in water is the intermediate number 21·8.

—The Iron Mountain Company, of Missouri, have at present in their employ 2,350 persons, including the employees' families, all of whom are dependent on the company for support. It is estimated that 300 tons of ore are weekly taken out by the company.

Some Experiments on the Application of the Measurement of Gases to Quantitative Analysis.

[From the Proceedings of the Chemical Society, May 21, 1868, and published in the London Chemical News.]

Dr. W. J. Russell described "Some Experiments on the Application of the Measurement of Gases to Quantitative Analysis." The author has made experiments for the purpose of testing the accuracy of a system of measurement, instead of weighing, in a variety of analytical operations wherein gases are evolved. The illustrations given in the paper have reference to the treatment of sodium and calcium carbonates with sulphuric or hydrochloric acid; manganic peroxide, decomposed by a mixture of oxalic and sulphuric acids; and, finally, zinc, magnesium, and other metals evolving hydrogen when undergoing solution in diluted acids. The apparatus employed consists of an eudiometer or measuring tube having attached to the top, at right angles, a flexible india-rubber tube, cemented on tightly with marine glue. This tube serves to connect it with a small flask, or bulb, in which the analytical operation is conducted, the acid being kept separate from the carbonate or metal in the usual manner (by a glass tube within), until all is ready for starting the decomposition; the gas and air measured before and after the experiment gives by difference the amount of hydrogen, carbonic acid, &c., evolved. India-rubber has been found to absorb notable quantities of the last named gas by long contact, but the error from this and other sources proves to be very trifling, the following results having been obtained by Dr. Russell:

CO_2 from carbonate of soda—		
Theoretical quantity	41·509	per cent.
Mean of eight experiments	41·533	"
Mean of other five experiments	41·432	"
CO_2 from calc spar—		
Theoretical quantity	44·000	per cent.
Mean of 13 experiments (HCl)	43·719	"
" 9 " (")	43.812	"
" 8 " (")	43·736	"
" 5 " (HNO_3)	43·924	"
Manganese ore—		
I. MnO_2	58·156	per cent.
II. "	58·101	"
Hydrogen from zinc foil—		
Theoretical amount	3·0769	per cent.
Pure—mean of 3 experiments	3·0757	"
Ordinary ditto	3·0204	"
Hydrogen from manganese foil and ribbon—		
Theoretical amount	8·333	per cent.
Pure—one experiment	8·281	"
Ordinary—mean of 4 experiments	8·265	"

The President, (Dr. Warren de la Rue), in returning a vote of thanks to Dr. Russell, took occasion to remark that the experience of microscopists confirmed the statement relative to the permanent character of a junction made between glass and marine glue.

Dr. A. W. Williamson considered that the foregoing would be an exceedingly valuable addition to our methods of analysis, and no doubt capable of extension. As a rule, the process of measurement can be conducted with greater accuracy than by weighing; for whilst we could not weigh closer than one-tenth of a milligramme in our best balances, it was possible to measure volumes of gas within one-hundredth part of a cubic centimetre.

Report of the New Albany Gas Works for May, 1868.

We have received the following report for May of the New Albany, Ind., gas-works, through the kindness of Mr. John Dunbar. And we would suggest that the managers of other works, both large and small, send us from time to time reports of a similar nature, which it would afford us great pleasure to publish. We hope this suggestion will not be overlooked.

Coal used (Pittsburgh coal)	1,425 bushels.
Gas manufactured	49,500 cubic ft.
Coke sold from same	1,400 bushels.

The above is for a bench of three retorts 8½ and 12 by 20; at no time during the month was the bench worked to its full capacity. Two of the retorts have been twenty months in steady use, and one retort in use nine weeks; heat about equal on all; comparatively no trouble with carbon, and the stand-pipes not so much trouble, from the fact of manufacturing less gas.

A SYSTEM
FOR
KEEPING THE BOOKS AND ACCOUNTS OF GAS COMPANIES.

By W. P. FODELL.

Entered according to Act of Congress in the year 1868, by W. F. Fodell, in the Clerk's Office of the District Court of the United States for the Eastern District of Pennsylvania.

First—The Superintendent should have a plan of the Works, with the location of each valve, drip, cyphon, pressure guage, etc., properly designated thereon; also a plan of street mains, with position of holders and street lamps, etc. For ready reference these plans should be framed, covered with glass, and with a movable back, so that they could be readily removed from the frame for alterations. A pressure register should also be placed on the main leading to distribution, and the paper filed for reference. A tell-tale should be attached to clock of the station meter—the papers also filed.

BOOK No. 1—MANUFACTURE BOOK—FORM.

1867. May.	No. of Times and Lbs. of Coal Used.					Bus. Coke Made.	Bush. Coal Used.	Bus. Lime Used.	Gals. Tar Mane.	Hours Charge Remained in.	No. Benches in Use.	No. of Retorts in Use.	
	200 lbs.	300 lbs.	400 lbs.	500 lbs.	600 lbs.							Clay.	Iron.
Day													
Night													

This book is to be kept by the foreman of the retort house, and its form will sufficiently explain its mode of use, as will most of the remaining books. All are intended to be footed up monthly.

BOOK No. 2—HOLDERS, Etc—FORM.

Date.	Height of Holder.	State of Station Meter.	Production.	Consumption	PRESSURE					
					On Hydraulic Main.	Between Washer and Condenser.	Between Condenser and Purifyer.	Between Purifyers and Meter.	Between Meter and Holder.	Between Holder and Consumer.

By deducting the state of station meter from day to day the production is ascertained. By adding or deducting the difference of the contents of the holders from one day to another, to or from the production, the consumption is ascertained. It will be well to have a table of the contents of the holder for this purpose.

BOOK No. 3—RETORTS—FORM.

HISTORY. NUMBER OF RETORTS IN USE.

House. No.	Stack. No.	Bench. No.	No. of Retorts to Bench.	Whole No. of Retorts.	Date of Lighting.	Date of Discontinuance.	Length of Time in Use.	Date.	House No. 1.		House No. 2.		No. of Retorts to each Bench.	Whole No. of Retorts in Use.
									Stacks.	Benches.	Stacks.	Benches.		

Each bench or retort as let up or let down is to be in its proper column, and when let down the length of time in use is to be noted, which is readily obtained by referring back to the date at which it was lighted. Every addition or subtraction will be denoted by the difference in the column, "Whole number of retorts in use."

BOOK No. 4—COAL, Etc.—FORM.

Date.	COAL.			COKE—BUSHELS.				LIME—BUSHELS.			TAR—GALS.		Yield of Gas per lb. of Coal.
	Received.	Lbs. Used.	Kinds Used.	Made.	Sold.	Used in Retorts.	Made Otherwise.	Received.	Used.	Sold.	Made.	Sold.	

This book is made up partially from the foreman's book No. 1, its object being to keep in better condition, and for office reference, a more complete and succinct statement of the operations of the manufacturing of the gas. The coal, coke, lime and tar should be balanced each month. The yield will be obtained by dividing the amount of coal used into the production obtained from book No. 2.

An Artesian Well and Subterranean River.

In sinking the second and last artesian well at the Chicago stock yards, says the *Times* of that city, three distinct veins of water were encountered. The first vein was struck in the thick bed of limestone following the second shale, and yielded about 15 barrels an hour. After passing this stream no water was seen until the 80 feet of limestone under the first sandstone had been reached. In this rock a very extensive spring, flowing at the surface of the well about 65,000 gallons a day, was opened. The third and large vein was struck in a bed of hard limestone, 1,190 feet from the starlight. The following table will show the depth from the surface at which the several strata commence, and the beds in which streams of water were found. Water was not found at the depths indicated, but was in the rocks which commenced at those depths:

Distance from surface.	Nature of rock.
Beneath surface of earth....	..... Hardpan.
40 feet.	.....First limestone.
300 feet.	.....First shale.
400 feet.	.....Second limestone.
420 feet.	.....Second shale.
550 feet (first water).	.....Third limestone.
877 feet.	.....First sandstone.
1,010 feet (second water).	.....Third limestone.
1,100 feet.	.....Last limestone.
1,130 feet.	.....Sand and limestone.
1,160 feet.	.....Same, but harder.
1,172 feet.	.....Last limestone.
1,190 feet (third water).	.....Same.

The vein from which the greatest supply of water was obtained appears to be about eight feet in depth, so far as can be ascertained by sounding. The current is a very strong one, and is apparently passing from the northwest to the southeast. This fact was ascertained by lowering into the bore, by means of a fine wire, a long lead plummet. The weight would descend steadily until it reached the stream of water, when it would instantaneously be snatched or jerked out from the perpendicular line from the direction indicated. In relation to the velocity of the stream one of the attendants explained that it was "about the swiftness of a catfish." The experiment with the plummet explains this remark. The current of water is sufficiently strong and rapid to snatch the heavy lead, and bear it away, as a fish would snatch an insect, and carry it beneath the surface of the river. The water in the wells present a marked and singular difference. In the old well it is strongly impregnated with sulphur. So thorough is the impregnation, that the water not only smells and tastes of the substance, but deposits it profusely at the bottom of the trough in which it is received, and the tank in which it is collected. After exposure to the air for a few hours, the sulphur is precipitated and partly carried off by the air, leaving a perfectly colorless and tasteless fluid. In the second well, on the other hand, there are no sulphurous evidences; but the water is strongly charged with one of the oxides of iron. It has no perceptible odor, but chalybeate characteristics are very apparent to the taste; and to the eye, in the iron-brown deposit which covers the bottom of the receiving trough. The force of the water of the last well is sufficient to discharge 600,000 gallons a day at the surface. In carrying itself to the height of the tanks, an altitude of 45 feet from the ground, it loses so much force that only 450,000 gallons are discharged at this point daily. It is estimated that at a further height of 130 feet, being 175 from the surface, the water would assume a stationary position, and would readily obey King Canute, or "any other man," if he told it to rise no farther. The wells are both now in running operation at the stock yards. They are the only means used in the supply of the immense amount of water there constantly required, and prove highly successful in every respect.

The Invention of Vulcanized Rubber.—After long years of effort and disappointment, Charles Goodyear stood apparently as far as ever from the attainment of his object; until one day, while in earnest conversation regarding his proposed invention, he emphasized an assertion by flinging away at random a piece of rubber combined with sulphur that he held in his hand. The fragment falling upon the stove, was subjected to a higher heat than that to which he had ever ventured designedly to subject the material; and when it was recovered it was found to possess the qualities for which he had sought so long; cold did not harden and heat did not soften the water-proof and elastic mass. And thus sprang forth the germ of an invention that has built up a new branch of manufacturing industry, given employment to thousands of operatives, and added in myriad forms to the conveniences of life.—*Am. Art.*

Estimation of Sulphur in Coal Gas.

Mr. Albert Ellissen, Engineer, Chief of the Experimental Works of the Paris Gas Company, has forwarded the following communication to the Editor of the *Journal of Gas Lighting*, in reply to the article by Mr. Valentin, principal assistant in the Royal College of Chemistry:

"The question of the estimation of sulphur in purified coal gas, which has for many years occupied the attention of engineers and of the public in England, should be considered from to points of view altogether different, which I shall call the practical and theoretical views of the question.

"Looking at it theoretically, or from the scientific point of view, the object is to determine the mathematically exact quantity of sulphur in the gas. When viewing the question practically, it is necessary to ascertain the causes which obstruct the detection of that substance, and to determine the quantity which, during the combustion of the gas for domestic purposes, might produce an effect injurious to health, or be destructive to furniture, books, &c. Does the process mentioned by Mr. Valentin accomplish either of those objects? I think not, and I will endeavor to show why.

"His process, which consists in burning gas mixed with air when passing over spongy platinum, is not new, a similar arrangement having been used in 1864 by Dr. Letheby, in his experiments on the sulphide of carbon in gas. Even according to Mr. Valentin, that method does not determine the total quantity of sulphur in the gas, and I think that is less owing to the imperfect absorption of the sulphur products, or to the difficulty of extracting them from the platinum by washing, than to the imperfect combustion of the sulphur: and I have no doubt that, if Mr. Valentin were to substitute pure oxygen for atmospheric in his experiments, he would obtain much more favorable results, and probably obtain the whole of the sulphur contained in the gas. But it appears to me that the process adopted in my experiments, afterwards repeated by Mr. Alfred Anderson, and by Mr. Valentin, which consists in passing the gas over quick lime or soda lime, heated to redness in a drawn-iron tube, is more simple than that of Mr. Valentin, as it does not require the making of oxygen for special aspiration, and gives exact mathematical results of the quantity of sulphur in the gas. I cannot admit that the use of nitric acid or of hypochlorites can occasion the least difficulty to experimental chemists.

"In answer to the doubt expressed by Mr. Valentin as to the correctness of the proportions I obtained by means of lime in 1864, I wish him to bear in mind that those experiments were made at the experimental works of the Paris Gas Company, expressly on gas obtained by varied distillations of coal of the most different kinds possible; which circumstance explains the great differences in the results obtained.

"Let us look, however, to the practical part of the question, which, in point of fact, will constitute the only interesting part of the discussion that will probably take place this year, in considering any measure on the subject to be brought before Parliament. In the reports of Dr. Letheby to the Commissioners of Sewers of the city of London, on the sulphur compounds in gas, which must be first considered, he states that, during the combustion of gas, the sulphur it contains produces sulphurous and sulphuric acid, which injure furniture, and especially books in libraries I will not again discuss what value is to be placed on that statement, for I have previously shown how many other causes contribute to the production of sulphuric acid in the atmosphere of large towns; but there can be no doubt that, if it be admitted that any damage is really done by the sulphur in gas, it can only be the portion of it which is converted by combustion into sulphurous or sulphuric acid that can really produce any injurious effect. The other portion of the sulphur, which is not consumed, and which consequently escapes into the atmosphere in the form of sulphide of carbon or vapors of sulphuretted organic products, cannot have any corrosive action. Why, therefore, should any trouble be taken to devise complicated apparatus to make it apparent? The practical problem then remains, to provide an apparatus by which all the sulphurous products during the combustion of gas, in the ordinary methods in use, can be completely ascertained; and I think that the apparatus contrived by Dr. Letheby, which is generally employed in England, fulfils all the conditions required for that kind of experiment.

"In that apparatus the gas is consumed with a Leslie's burner, under the best practical conditions for a good oxidation of the sulphur contained in the gas. The consumption with that burner is so slow, that certainly during the ordinary burning of gas so perfect a combustion does not take place, and which may be made similar to the blue flame necessary in heating apparatus —a mode of consumption which should be taken into consideration in the use of gas for domestic purposes. The condensation of the sulphur products (sulphurous and sulphuric acids) in the glass cylinder is complete; experiments having proved that a sensibly greater amount of sulphur is not obtained by increasing the number of those vessels, not by filling them with ammonia. The apparatus of Dr. Letheby has an additional advantage that the experiments may be made on the average quality of the gas manufactured during the day of twenty-four hours, and does not require the least superintendence. An interval of a few seconds is sufficient to empty the liquor collected in the cylinder, the quantity of which affords a valuable check on the correctness of the progress of the experiment, and a fresh experiment may be immediately commenced by merely opening the stop-cock for the gas.

"In a practical point of view, Mr. Valentin's apparatus is far from offering the same advantages. In the first place, the gas is consumed or decomposed under conditions not in the least like the usual manner of burning gas in private houses, and though the apparatus does not estimate the whole of the sulphur in the gas, nevertheless in these experiments a part of it is taken cognizance of which practically is not of the least interest, as it generally escapes into the air in a form that is not injurious. Furthermore, the apparatus is complicated; it requires difficult manipulation, a complicated fitting up and taking down, a continued superintendence during the whole time of the experiment, in order to supply an adequate quantity of air to the tube; and, as the experiment last only a few hours, the average quality of the gas made during the day cannot be ascertained. In short, I believe that this very ingenious apparatus of Mr. Valentin's is adapted exclusively to the laboratory, as it can only be used by an experimental chemist, and that it does not possess that practical working character required in a testing apparatus that is to be used by intelligent workmen rather than by men specially devoted to scientific pursuits.

"In conclusion, long consideration of the subject of the sulphur contained in purified gas has induced me to regard the simple apparatus of Dr. Letheby as the one which best fulfils the practical conditions of an instrument for testing the quantity of sulphur which, unfortunately, the progress of science has not yet succeeded in completely extracting during the manufacture of gas.

"PARIS, April 15, 1868."

The Editor of the *Journal of Gas Lighting* appends the following note to the communication:

"We are informed that Dr. Letheby made a large number of experiments, in 1854, with an arrangement on the same principle as Mr. Valentin's, the products of the burnt gas being passed with an excess of atmospheric air through a mass of very fine platinum wire, at a temperature a little below redness: and the results were so unsatisfactory that the process was abandoned. Dr. Letheby also endeavored to estimate the sulphur by passing the gas through a glass tube filled with small pieces of caustic baryta (obtained from the nitrate by ignition), and kept at a red heat; but as the process could not be continued for 24 hours—the time for a fair analysis—this also was abandoned."

Composition Oil.

The nature of this invention relates to utilizing the waste from paper mills, said waste being the liquid which runs from the bleaching apparatus, and which, in combination with certain oils, produces a composition or an oil to be used as a substitute for linseed oil in the various preparations of paints, putty, and cement, or for all the purposes for which pure linseed oil is ordinarily used, for painting, etc. The following is a full and complete description of the ingredients and manner of compounding the same:—This liquor or waste is subjected to a process of cleansing, by filtration or otherwise, if intended for fine work. With this liquor is compounded, in about equal parts, according to the strength of the liquid, linseed oil, or other oils of an analogous nature, or with the distillates of petroleum. This fluid or waste, when mixed with linseed oil in the proportion above said, forms a thick, semi-transparent fluid or oil, which may be thinned down to a proper consistency for painting, by the use of turpentine or benzine, in the ordinary way, and which, of itself, forms an excellent varnish, which soon dries, having a hard, glassy surface, and fire-proof. This composition readily combines with the various pigments, as white lead, zinc, ochres, and other coloring materials ordinarily used for painting, making a hard, durable, glassy, and fire-proof paint, which can be laid on with a brush with the same facility as the best linseed-oil paint, and at little more than one-half the expense. This oil, when combined with whiting and lead, makes a good putty for glazing, much stronger and more tenacious than ordinary putty, and will not crack and peel off by exposure to the weather; and when used simply in combination with lime, it forms a strong, hard cement, or stone-like substance, which, for roofing purposes, when of a proper consistency, can be spread on with a trowel, on tin, sheet iron, or paper. This soon become as hard and strong as slate. The process was patented by Mr. William Ward, of Cleveland, Ohio.

Absorption of Gases by Charcoal.

BY PROFESSOR ALBERT R. LEEDS.

In Watts' excellent Dictionary of Chemistry, Vol. I, p. 761, there is an account of the absorptive power of charcoal upon gases, which has been taken chiefly from the late researches of Dr. Stenhouse. Having repeated and somewhat extended these experiments, I have thought that so much as follows may be of general interest.

Some pieces of charcoal prepared from a cocoa-nut shell, and which were of a dense, lustrous character, were placed in a tube, and a stream of sulphuretted hydrogen, previously dried with chloride of calcium, passed over them. After the lapse of ten minutes, the tube was detached, and indicated on the balance an increase of weight, due to the absorbed gas. A current of oxygen was next passed over the charcoal; the tube became slightly warm, owing to the oxidation of the hydrosulphuric acid, but in no case in a number of experiments, was there (as I have seen it stated), a spontaneous ignition. On heating with a spirit-lamp vapor of water was condensed upon the sides of the tube, and sulphur deposited; sulphurous acid not perceptible. When platinized was substituted for ordinary charcoal, the amount of moisture and sulphur was increased.—Even in this instance, however, ignition was not spontaneous, but followed on the application of the spirit-lamp for a few momonts.

By depositing finely divided platinum upon the surface and in the pores of the charcoal, a variety of interesting results were obtained. This may be effected by boiling charcoal in lumps or powder in a solution of bichloride of platinum for five to fifteen minutes, according to the size of the pieces, and then heating the charcoal to redness in a platinum crucible; holding the charcoal in the flame of a spirit-lamp will answer. A piece platinized in this way was immersed in a jar, containing one measure of oxygen, and 2 of hydrogen; the charcoal glowed with a dull red light, and effected a silent combination of the mixed gases. A more highly platinized fragment lit up instantaneously, the jar became clouded with smoke, and anion was determined with explosion. In a stream of hydrogen, the platinized charcoal, which was previously at the temperature of the room, ignited quickly throughout and set fire to the gas. In oxygen, no action apparent. Held before the nozzle of the compound blow-pipe, the jet was speedily lighted. When previously warmed, the platinized charcoal became incandescent in burning gas, but did not inflame it, owing to the high temperature at which coal gas ignites In alcohol vapor, there was no action apparent in the cold, but a spark previously formed in the flame of a lamp, increased in size with the production of acid vapors. A mixture of one volume of hydrogen and one of chlorine was not ignited; whether the hydrochloric acid was silently formed at a slow rate was not determined. The importance of such experiments in relation to ventilation and disinfecting will be readily perceived.

Coal Mining in Japan.

The Japanese are said to work their coal mines in a very primitive way. Mr. Locock, in a recent letter to the British Foreign Office, thus describes their method:

"I had an opportunity while there of visiting the works—if, indeed, they deserve the name—which have been undertaken for procuring the coal. Here and there, wherever the coal or shale which had laid over it had been seen cropping out from the hill's side, a horizontal passage had been run in, never more than twenty-five feet, and often only ten or twelve feet in length. In some of these burrows two or three men, crouched to the ground, were at work picking away at the sides with pointed hammers, and sorting each little piece of coal with their hands before throwing it into one heap or another, according to its quality. A few Coolies, in the last stage but one of nudity, collect the coal at the mouths of these burrows, and carry it to where the road admits of its being transferred to the backs of bullocks, or to three-wheeled carts, holding about half a ton each, and drawn by one beast. In this way it is brought to the Hiogo market. A great portion of it is very inferior quality. Here and there, however, good specimens of a kind of anthracite are brought out from the hill's side. The seam which has been discovered is about two feet thick, and runs down toward the plain at an angle of about fifteen degrees, or nearly that of the hills themselves. There is, therefore, good reason to believe that, by boring in the plain below, the same, if not a better, seam might be discovered.—The Japanese government are not insensible to the advantages to be derived from a more scientific working of the coal of Hiogo, and it is not impossible we may soon see a regular coal mine opened, that is worked by European machinery."

The Probable Exhaustion of the English Coal Mines.

Professor W. Stanley Jevons, of Owen's College, Manchester, recently lectured on this subject at the Royal Institution, London. We quote the condensed report of the *Mining Journal*:

"In his introductory remarks he referred to the recent enormous increase in the quantities raised from the mines of Great Britain—64,600,000 tons in 1854, and 101,630,000 in 1856. He stated that about half the carrying power of British railways is occupied in conveying coal, and that it would require a fleet of five times the amount of tonnage of the whole of the vessels which now enter English ports in a year to bear the whole of that coal, it being the greatest trade ever carried on. * * * As almost all our manufactures are carried on by the aid of coal, directly or indirectly, there is every reason to suppose that its employment will become more and more general. * * * Mr. Jevons said that the limited extent of the British coal mines will prevent us from much longer extending the production of coal as rapidly as in late years; and other countries will soon develop their more abundant mines, and in time will enjoy a larger supply of coal than we do. He desired that it should be especially understood that he had never supposed the English mines could be literally exhausted. What he had asserted was that coal would become dearer here and cheaper abroad; and that, instead of producing more than half the total supply of coal in the world, we should, after fifty or one hundered years were passed, produce only a fraction of it."

Professor Jevons drawa a distinction between the literal exhaustion of the English mines and their economical exhaustion. This may be well enough for philosophers, but it carries cold comfort for statesmen and owners of consols. * * * We agree with the professor that the discovery of new sources of motive-power more economical than coal is a very unlikely thing. The developments of science indicate the improbability of any such discovery. * * * We may use electricity as a motive-power; but we are only using another form, as it were, of heat; and, so far as we can judge, a much less convenient form. In other words, if all the work now performed by coal were performed by electricity, we should still consume as much coal, and probably more. * * * Suppose, then, that in fifty or a hundred years England's great supply of power becomes exhausted that, "instead of producing more than half the total supply of coal in the world, she should produce only a small fraction of it." The result would be gradual, but inevitable and final, ruin of her commercial supremacy. * * * Several important social and political signs point in the same direction. In the first place, the encroachments of Russia in Asia, and the schemes of France in Egypt and Arabia, tend to deprive the British empire of its vast Indian provinces, or, at all events, to take from England the only thing for which she values those provinces, the Indian trade. On the other hand the Pacific Railroad and the steamship line from San Francisco to China put New York like a toll-gate between England and that quarter of the world. English houses will be obliged to establish their branches and agencies there; American houses will multiply and wax strong; coal or no coal, the world's commercial centre of gravity is changing its place. The social condition of England herself is no less significant. Every year shows the soil of that country distributed among fewer proprietors. Large tracts of land are returning to the uncultivated condition, to serve as parks and preserves for gentlemen: the rich are constantly growing richer and the poor poorer. Hundreds of thousands are annually leaving the shores of their native land, to seek in the New World that permanent foothold which they cannot maintain at home. * * * When the diminished resources of England can no longer maintain, in spite of geographical advantages, her commanding commerce and manufactures, there will be nothing to prevent the workingmen from leaving that soil which they do not own. The operation of all these causes may be delayed by measures of wise statesmanship; but we do not see how the result can be considered otherwise than inevitable.—*Mining Register.*

Reduction of Carbonic Acid to Oxalic Acid.—Dr. E. Dreschel has achieved a triumph in synthetical chemistry by producing the oxalate of soda by means of carbonic acid. A mixture of pure sodium and dry sand is heated in a flask to about 350 degrees Centrigrade, over which a stream of dry carbonic acid is rapidly passed. After a few hours the metal becomes red and ultimately black. To avoid the reduction of the carbon, the heat should be moderated in the latter part of the operation, and the whole slowly cooled. Left in the air to oxidize, and then exhausted with water, about one-tenth of the mass is found to be oxalate of soda. In the same way oxalate of potassa may be obtained from an amalgam containing two per cent. of potassium.

Correspondence.

Information for "Y. Z." and Others.

Hagerstown, Md., June 27th, 1868

Messrs. Editors: In your issue of June 16, I notice an article from a correspondent, complaining of being considerably troubled by tar passing the condensing pipes and clogging the trays etc., in the purifiers, and wishes to know, through the Journal, the proper temperature at which the condensers ought to be kept to remedy the difficulty mentioned.

It has been insisted upon by some gas engineers that "good condensation is the half of purification;" but condensation may nevertheless be carried too far; for if coal-gas is exposed to a temperature below 45° much of its illuminating properties are consumed, and the quality of the gas consequently much injured.

The cause of the difficulty is, the gas is not brought into contact with enough condensing surface. The interior column of the gas is not brought into contact with any surface until it reaches the sieves in the purifiers, and hence the cause of the obstruction complained of. If your correspondent places a coarse wire sieve on the bottom of the inlet side of the purifiers, and covers them with straw to the depth of eight or ten inches, after a few charges have been run through he will be astonished at the result. It does not require to be changed when beginning to get discolored; then is the time it has the best effect.

I have been troubled the same way; so much so, that the pressure of gas was so great that it forced the seal out of the syphon, and I had to change the purifiers sometimes before three charges were through the fresh lime. I have adopted the use of straw for ten years past, and my first layers of lime leaves the purifiers nearly as free from moisture as the last one

If your correspondent tries the remedy recommended and find it answers the purpose, I hope he will acknowledge it through your Journal, so that others may be benefitted thereby. I change the straw about once every four months. Yours, etc.,

George Coles.

Danger of Gasholders Exploding.

Knoxville, Tenn., June 23d, 1868.

Messrs. Editors: I read in your last issue a notice of the fire at the Washington gas-works, in which it is stated "that it was apprehended for a while that the gas in the gasometer, which was heavily charged at the time, would explode."

I think it ought to be known that there is little danger to be apprehended from such a cause; as long as gas is in the holder it is harmless; and that throwing cold water upon the heated plates of the gasholder has a tendency to bring about the catastrophe so much dreaded. The only effect of heat on the plates of the holder (as all gas men know) is to raise it, and the only danger would be from its "blowing," which can be averted in the usual way, by opening the valve into another holder, or into the street.

If these facts were more widely known, I think they would be the means of allaying much needless apprehension when a fire takes place near a gasholder.

Respectfully, Jas. Somerville, Sup't.

The Proposed Convention.

Brookline, Mass., June 8th, 1868.

Messrs. Editors: I see by your last edition that the Convention of gas engineers and others is postponed. It seems to me that Cincinnati is not so convenient for the majority as New York or Philadelphia. I met a dozen gas superintendents in the vicinity of Boston last week, and all said they would go to the latter places; only two proposed to go to Cincinnati, viz., Mace, of Lynn, and Coggswell, of Fitchburg. Neal, of Charlestown, Cushing, of Lowell, and Cabot, of Lawrence, said they would go to New York or Philadelphia. How would it do to call for a vote in your next, to decide upon the location, either Cincinnati or New York?

Yours truly, F. C. Sherman, Sup't.

Smedberg's "Synopsis of Gaslighting."

Vicksburg, Miss., June 11th, 1868.

Messrs. Editors: Please add my name to your list of subscribers for Smedberg's "Synopsis of British Gas Lighting." I think it will be a work we are greatly in need of. Your paper does not come to us regularly; if the fault lies with you, please remedy it, for I do not like to miss one number of it. Yours respectfully,

Geo. T. Stacey, Sup't.

[The fault is not at our end of the line. If any further trouble is experienced let us know promptly, and we will discover the delinquency wherever it may be. This remark is intended for all our subscribers.—Ed.]

Meriden, Conn., June 19th, 1868.

Messrs. Editors: You will please send a copy of "Synopsis of British Gas Lighting," and one of "Bookkeeping for Gas Works" to the Meriden Gas Light Co.

Respectfully yours, J. A. Hadley, Sup't.

The following additional subscribers to "Smedberg's Synopsis of British Gas Lighting" have been received, making 188:

Wm. E. Frisby, Sup't Vallejo, Cal., Gas Company.
Ironton, Ohio, Gas Company.
Thomas B. Fogarty, 30 Cheever Pl., Brooklyn.
J. A. Hadley, Sup't Meriden, Conn., Gas Works.
Geo. T. Stacey, Sup't Vicksburg, Miss., Gas Co.
Douglas Ward, Sup't Jackson Gas Co., Miss.

Manufacturing Items.

—The Trinidad lumber mills, in Humboldt County, California, were blown up on June 15th.

—The mills at Biddeford, Maine, are now running but four days in the week.

—The Pacific Pump Company have filed articles of incorporation in the Secretary of State's office at Sacramento, Cal., to manufacture the American Submerged Pump. The capital stock in $500,000, in 5,000 equal shares. Term of existence, twenty-five years.

—The *Mining Press* says that Mr. Bush, who introduced the American Improved Gas Light in California last summer, has returned from the Eastern States, where he has been to examine the latest improvements and make arrangements for its successful introduction in California, where, it is understood a company is to be formed.

—A canal company has been formed to build a steam tug, and apply it to a new plan for towing on the Erie Canal. It is claimed that this method will reduce the cost of transportation and time occupied between New York and Buffalo one-half.

—The Brooklyn Bridge project is resting for want of funds. The City Council deemed that they had sufficient reasons to refuse granting the $3,000,000 asked for by the Bridge Company, until Mr. Roebling's plans had been approved as to construction and cost, by a competent commission. It is more than probable that this commission will consist of Col. J. W. Adams, Mr. W. J. Mac Alpine, and Mr. Latrobe, of Baltimore.

—In the foundry of the Port Richmond Iron Works, of Philadelphia, are three cupola furnaces, the largest of which will melt twelve tons of iron per hour. In the machine shop of the same establishment there is a planing machine capable of planing castings eight feet wide, six feet high, and thirty-two feet long; a lathe that will swing six feet long, and turn a length of 34 feet; and a boring-mill believed to be the largest in America or Europe, that will bore a cylinder sixteen feet in diameter and eighteen feet long.

—A locomotive engine, designed to run on the Mount Washington Railway, is nearly completed at Franklin, N. H. The boilers are upright, and contain 330 tubes, with 500 square feet of heating surface. The cylinders are ten inches in diameter, with sixteen inches stroke. This engine, in ascending the mountain, is coupled to the rear end of the train, and pushes the cars up the declivity. The best materials have been used in its construction, and powerful brakes and other safeguards provided for protection against accidents. It has been four months building, and weighs about seven tuns.

—The town of Winchendon, Mass., claims to manufacture more wooden ware than any other town in the world. Two of the largest firms turn out $500,000 and $200,000 worth per year, respectively, and the smaller establishments of the place make the aggregate annual product of the wooden ware interest mount up to over $1,000,000. In addition to these factories, Winchendon contains two cotton mills, two bobbin factories, two machine shops, and two sewing machine manufactories

PATENT CLAIMS.

Pertaining to Gas, Water, etc.

77,314.—Gas Tube.—Edw. L. Perry, New York city.

I claim as a new article of manufacture impervious flexible gas tubing, composed of rubber and paper tubes, substantially for the purpose described.

78,053.—Gas Heater.—Chas. Burnham, Philadelphia.

I claim the two cylinders arranged to slide telescopically, one within the other, to adjust the height of the plane of combustion or the length and capacity of the mixing chamber, substantially as described.

78,305.—Gas Regulator.—S. F. Matthews, Mechanicsburgh, Pa.

I claim, 1. The nipple-tube B and the thimble E, constructed, arranged and operating substantially as and for the purposes described, in combination with a gas pipe.

2. The body of the governor A, the case C, tube B, thimble E, and spring h, in combination, forming a gas regulator, substantially as shown and described.

78,307.—Gas Apparatus.—James McCleish, New York, N. Y., assignor to himself and E. V. Haughwout & Co.

I claim, 1. The constructing of the gasholder B with rigid or inflexible top and bottom plates a b, and flexible gas-tight sides, the latter being folded or crimped, in the manner as herein shown and described.

2. The pressure arms C D, arranged and applied substantially as set forth, and used in connection with springs or equivalent weights for the purpose of exerting a uniform pressure on the gasholder, substantially as set forth.

3. The windlass-drum m, provided or arranged with a coil or barrel-spring, and used in connection with suitable cords, for the purpose of raising or assisting in raising the gasholder during the process of the filling of the same, substantially as set forth.

4. The elevating of the arms C D through the medium of the windlass G, and cords k k l, arranged and applied substantially as set forth.

5. The drum s, provided with an internal coil-spring t, and a fusee w, on its exterior, in combination with the cords a' a'', c' ad, arranged as shown, or in an equivalent way, for compressing the gasholder and exerting an equal or uniform pressure on the same.

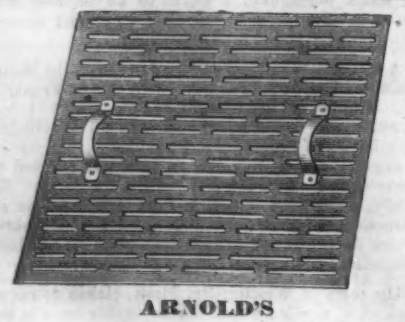
6. The cords f k k, and l, in combination with the windlass, H, all arranged to operate substantially as and for the purposes specified.

7. The receiver K, with the pipes J L, and M, communicating therewith, and provided with stopcocks, and all arranged substantially as shown and described.

8. The rollers h', on the top plate a of the gasholder, in combination with the vertical guide-rods i, arranged substantially as shown and described, for the purpose of retaining the holder in proper position.

9. Bracing or staying the holder B by means of the straps a x, extending around the interior of the holder and transversely across it, as shown and described.

Whitewashing.—A great many recipes for whitewashing have been published in this Journal, but we think the following to be the best that can be used: White chalk is the best substitute for lime as a wash. A very fine and brilliant whitewash preparation of chalk is called "Paris White." This we buy at the paint stores for three cents a pound, retail. For each sixteen pounds of Paris white we procure half a pound of the white transparent glue, costing twenty-five cents (fifty cents a pound). The 16 pounds of Paris white is about as much as a person can use in a day. It is prepared as follows: The glue is covered with cold water at night and in the morning is carefully heated, without scorching, until dissolved. The Paris white is stirred in with hot water enough to give it the proper milky consistency for applying to the walls, and the dissolved glue is then added and thoroughly mixed. It is then applied with a brush like the common lime white wash. Except on very dark and smoky walls and ceilings, a single coat is sufficient. It is nearly equal in brilliancy to zinc white, a far more expensive article.



ARNOLD'S

METALLIC GAS TRAYS.

These Trays are made of sheet metal galvinized or tinned to prevent oxydization. Warranted to wear longer and to be cheaper in the end than any Tray known. They are light, cheap, easily kept clean, and almost imperishable.

Manufactured and sold by T. G. ARNOLD,
191-215.) 334 and 336 West Twenty-first-st., N. Y.

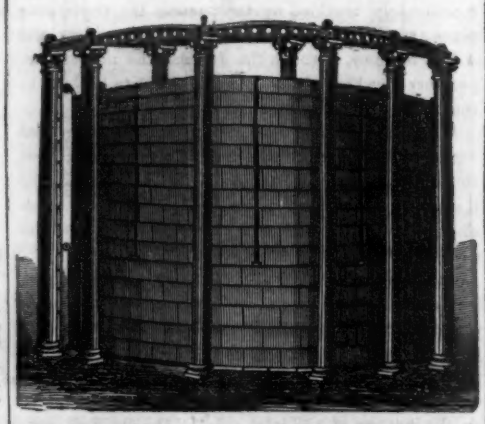
T. F. ROWLAND.

Continental Works,

Greenpoint, Brooklyn, N. Y.

NEW YORK OFFICE, 171 B'WAY, ROOM 9.

Engineer, and Manufacturer of



GAS-HOLDERS

OF ANY MAGNITUDE,

Condensers, Scrubbers, Purifiers, Retorts, Hydraulic Mains, and all other articles connected with the Manufacture and Distribution of Gas, furnished with despatch: Plans and Specifications prepared, and Proposals given for the necessary Plans for Lighting Cities, Towns, Mansions, and Manufactories.

IVES' PATENT LAMPS.

The Best and Most Reliable!

CHANDELIERS, 2, 3, 4, 6, 8, 9, & 12 Lights.
BRACKETS, 1, 2, & 3 Lights.

Hanging, Table and Hand Lamps of All Kinds,

☞ Can be lighted as quickly as Gas, Filled, Trimmed safely and neatly, without removing the Shade, Globe or Chimney, or unscrewing the burner.

We make a specialty of furnishing

SAFE STATIONARY LIGHTS

in place of those that are movable and dangerous, and

PURE NON-EXPLOSIVE OIL

in place of the unsafe adulterated stuff so often used by careless and ignorant persons.

Our new catalogue is just out, with many new illustrations, and a new list of

Reduced Prices.

A discount made to Churches and Clergyman.

Lamps and Oil cheaper than ever!

Since the reduction of Government Tax on oil we sell the pure article 20 per cent. less than before.

Shipped for family use in HERMETICALLY TIGHT barrels to all parts of the country.

JULIUS IVES & CO.,
49 MAIDEN LANE, N. Y.
Manufacturers and Dealers in
209tf KEROSENE GOODS GENERALLY.

P. P. DEILY,

39 LAUREL STREET, PHILA., PA.

BUILDER OF GAS WORKS,

GAS-HOLDERS,
COKE BARROWS,
COAL WAGONS,
IRON-TRESTLE ROOFING,

AND EVERY DESCRIPTION OF WORK NECESSARY FOR

GAS OR WATER WORKS.

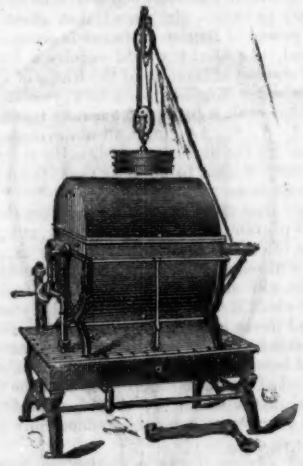
Particular attention paid to the Extension of Works, and repairs to Gas-holders, Purifiers, &c.
Also Builder of Boilers, Oil Tanks, Oil Stills, Water Tanks, &c.

☞ TERMS REASONABLE ☜

Refers to M. H. Jones, Easton Gas Co., Penn.
Franklin Woolman, Burlington Gas Co., N. J.
O. W. Goodwin, Camden Gas Co., N. J.
Benjamin Acton, Salem Gas Co., N. J.
Dr. Marcy, Cape Island Gas Co., N. J.
W. F. Warner, Owego Gas Co., N. Y.
E. Wilcox, Joliet Gas Co., Ill.
Messrs. Woodbury, Walter & Potter, Kalamooza Gas Co., Michigan.
H. H. Fish, Utica Gas Co., N. Y.
W. J. Ball, Terre Haute, Indiana. (196-1yr.

SOLAR GAS MACHINES.

For Lighting Private Dwellings, Churches, Hotels, and Factories in any locality, and independent of any Gas Company.



We manufacture eight sizes of the Solar Gas Machines, ranging from ten to five-hundred light capacity. Every machine is put in operation and fully tested before it is sent off, and is guaranteed to give perfect satisfaction.

TESTIMONIALS.

Southboro', March 29, 1867.

Messrs. O. P. Drake & Co., Boston:

Gentlemen: I will say that I had your Gas Machine in use about nine months, manufacturing gas for lighting my store. The light is good, clear, and at all times reliable. Its cost is less than half the cost of street gas. As regards safety, I think it very much safer than kerosene lights. Yours respectfully,
WILLIAM C. BARNES.

Lake Forest, Ill., Aug. 30, 1867.

Chas. Matthews, Esq.,
Ag't for Drake's Solar Gas Machine, Chicago:

Dear Sir: * * * * * * * * * I would say that I have had the machine in constant use for the last six months, and am well pleased with it. The light is clear and steady, and the whole apparatus works to my entire satisfaction. Yours,
WM. S. JOHNSTON, Jr.

PRICE LIST OF MACHINES,

DELIVERED IN BOSTON.

No. 1	$	No. 5 a 150 light	$1,000
" 2 a 15 light	250	" 6 a 300 light	1,800
" 3 a 30 light	350	" 7 a 400 light	2,500
" 4 a 75 light	550	" 8 a 500 light	3,000

40 Gall. Brass Tanks (wood covered), each $30 00
Union Faucets, each 5 00

Gasoleine at lowest market rates
A liberal discount made to the Trade for Cash.

W. S. DRAKE,
General Agent, No. 18 Dey-st., N. Y.

THE DESPARD COAL COMPANY

OFFER THEIR SUPERIOR

DESPARD COAL

To Gas Light Companies throughout the country.

Agents, PARMELEE BROTHERS, No. 32 Pine street, N. Y.
BANGS & HORTON, No. 31 Doane street, Boston.

Mines in Harrison County, West Virginia.

Wharves, Locust Point, } Baltimore.
Company's Office, 29 South street, }

Among the consumers of Despard Coal, we name: Manhattan Gas Light Company, New York; Metropolitan Gas Light Company, New York; Jersey City Gas Light Company, N. J.; Washington Gas Light Company; Portland Gas Light Company, Maine.

*** Refrence to them is requested. 204 1y

A RARE OPPORTUNITY

TO IRON WORKERS, TIN MEN OR GAS-FITTERS IN ANY OF THE GREAT CITIES.

The Editors of this Journal announce that they have made arrangements with the Patentee of the valuable inventions already described in these columns, and known as the Cambridge Gas Furnace, Gas Stove, Gas Oven and Gas Range, to secure their more general use and introduction; and that they are now authorized to lease or sell licenses for the manufacture and sale of the same, to responsible persons, on very favorable terms. For circulars and information, apply at this office.

☞ Our readers are assured that an opportunity for great profit is herein presented. 203

MINER'S
PATENT STREET LAMPS

Are generally acknowledged to be the simplest, cheapest and most durable in use. The patentee is ready to fill all orders, or dispose of rights on liberal terms, as those at present engaged in the manufacture can attest. JACOB G. MINER,
Morrisania, Westchester county, N. Y.

LABORATORY OF INDUSTRIAL CHEMISTRY, directed by Prof. H. Dussauce, Chemist.

Advices and Consultations on Chemistry as applied to Arts and Manufactures, Agriculture, Metallurgy, etc. Plans of Factories, Drawings of Apparatus, Analyses of Ores, Manures, Mineral Water, and Commercial Assays in general.

Prof. H. Dussauce is ready to furnish information on the principal chemical manufactures such as soaps, candles, oils, petroleum, vinegar, matches, mines, etc., etc. For further details address—
3 Professor H. Dussauce, Chemist, New Lebanon, N, Y.

SCHOOL OF MINES,
COLUMBIA COLLEGE,
EAST 49th STREET, NEW YORK.

FACULTY:

F. A. P. BARNARD, S.T.D., LL.D., President.
T. EGLESTON, Jr., E. M., Mineralogy and Metallurgy.
FRANCIS L. VINTON, E. M., Mining Engineering.
C. F. CHANDLER, Ph. D., Analytical and Applied Chemistry.
JOHN TORREY, M.D., LL.D., Botany.
CHARLES A. JOY, Ph.D., General Chemistry.
WILLIAM G. PECK, LL.D., Mining Surveying and Mechanics.
JOHN H. VAN AMRINGE, A.M., Mathematics.
OGDEN N. ROOD, A.M., Physics.
JOHN S. NEWBERRY, M.D., Geology and Palæontology.

The plan of this School embraces a three years' course for the degree of ENGINEER of MINES, or BACHELOR of PHILOSOPHY.

For admission, candidates for a degree must pass an examination in Arithmetic, Algebra, Geometry and Plain Trigonometry. Persons not candidates for degrees are admitted without examination, and may pursue any or all of the subjects taught. The next session begins October 7, 1867. The examination for admission will be held on October 8. For further information and for catalogues, apply to DR. C. F. CHANDLER
180-1yr. DEAN OF THE FACULTY,

To Gas-Light Companies.

A SITUATION AS SUPERINTENDENT IS wanted by a competent man, whose experience qualifies him to undertake the management or construction of gas-works of any size. Best references to parties in New York and elsewhere. Address SUPERINTENDENT, office Am. Gas Light Journal. 201tf

---

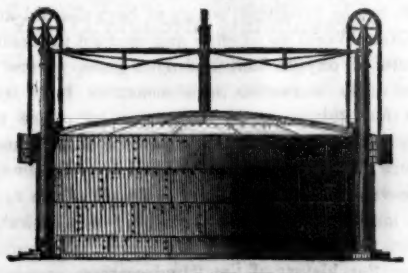
To Gas Companies.

A MANAGER OF SIX YEARS' EXPERIENCE desires a Situation with some Gas Company of moderate size. He is a practical Gas-fitter, and familiar with accounts. Would make gas and take state of Meter, lay or repair street mains, &c., if necessary, for a small works. Address R. Horton, care American Gas-Light Journal. 201-2

TURNBULL'S
AUTOMATIC PURIFIER.

STATE RIGHTS FOR SALE ON LIBERAL terms. For further information address by letter, WM. C. TURNBULL, care of T. C. Babcock, 59 Broadway, or to the Editors of this Journal.

ERIE BASIN IRON WORKS,
MANUFACTURERS OF



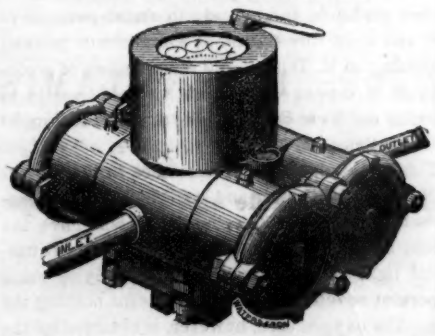
GASOMETERS
OF ALL SIZES INCLUDING
FRAMES, GIRDERS, STANDING PIPES, WALL PLATES, GAS MAINS, RETORTS, ETC ETC.
ALSO
STANLEY'S
Patent Hydraulic Gas Main.

Our superior facilities for doing this class of work encourages us to solicit Gas Companies and others to give us their orders.

We have excellent arrangements for shipping directly from the works, the depth of water being ample.

Office and Works on
Dwight, Elizabeth and Van Dyke streets,
SOUTH BROOKLYN, N. Y. 1

H. R. WORTHINGTON'S



PATENT WATER-METER,
This Meter is also used for the measurement of Oil —it combines

ACCURACY, SIMPLICITY, and REMARKABLE DURABILITY with such ease and certainty of motion, as to offer no appreciable obstructions to the flow of water in the pipes to which it is connected, as it runs and registers upon three inches head, or when delivering the smallest stream. These qualities, with its low cost, have caused its extensive adoption by corporations and individuals, in many of our largest cities.

HENRY R. WORTHINGTON,
61 Beekman steet, N. Y.

WORKS ON THE MANUFACTURE OF GAS,

FOR SALE BY
D. VAN NOSTRAND,
Publisher and Importer, 192 Broadway, New York.

CLEGG'S PRACTICAL TREATISE ON THE MANUFACTURE AND DISTRIBUTION OF COAL-GAS.

Its introduction and progressive improvement. Illustrated by 174 engravings on wood, and 33 plates from working Drawings, with General Estimates. One volume, 4to. Price $10 50.

THE ANALYSIS, TECHNICAL VALUATION, PURIFICATION, AND USE OF COAL-GAS.

By W. R. Bowditch, M. A., F. C. S., with numerous illustrations. One volume, 8vo. London, 1867. Price $6 25.

THE GAS-WORKS OF LONDON.

By Zerah Colburn, C. E. Contents: Sketch of the Gas-Works of London; Process of Manufacture, Quality produced, and Cost, Profits, &c. One volume, 12mo. Price 75 cents

THE GAS CONSUMER'S GUIDE.

By Wm. Richards, C. E., containing instructions on the Management of Gas; the means of Economizing Gas; Popular description of Gas Meters, with full directions for ascertaining the consumption by Meter, Ventilation, &c. One volume. 50 cents

GAS-WORKS AND MANUFACTURNG COAL-GAS.

By S. Hughes. One volume, 12mo. Price $1 50.

BANISTER—GAS MANIPULATION.

With a description of the various Instruments and Apparatus employed in the Analysis of Coal and Coal-Gas. By the late Henry Banister. Enlarged by Wm. T. Sugg, C. E., London, 1867. 8vo., cloth. Price $7 50

ALFRED BLISS, JAMES ROOT, ALBERT F. NYE
ALFRED BLISS & CO.,
Manufacturer of and Wholesale and Retail Dealers in
CHANDELIERS,
And Every Description of
GAS FIXTURES,

Coal-oil Chandeliers & Lamps in Metal
With a Complete Assortment of
Glass, Paper and Porcelain Shades.

☞ BLISS' PATENT CENTER LIGHT SLIDE CHANDELIER Manufacturod Solely by us.

Warehouse and Manufactory, 95 Bleecker Street, New York. [99

MURRAY, BAKER & WALKER,
PRACTICAL BUILDERS,
AND CONTRACTORS FOR THE
ERECTION OF GAS WORKS.
Manufacturers of all the latest and most improved
APPARATUS AND TOOLS
FOR THE
Manufacture and Distribution of
COAL GAS.
WORKS AT THE RAILWAY DEPOTS,
FORT WAYNE, INDIANA.

We manufacture Bench Castings, Washers, "The Immersed Multitubular," and Atmospheric Condensers, Wet and Dry-Lime Purifiers, Dry Center Seals, Telescopic and Single Gas Holders Wrought Iron Trussed Roof for Iron or Slate, Wood and Iron Trays for Purifiers, Coke and Coal Carts, Wrought Iron Screening Shovels, and Castings and Wrought Work of every description for Gas-works.

Mr. Walker's long experience as a Manager of gas-works renders the success of any system of Gas-Lighting which may be entrusted to his firm a matter of certainty.

He will wait personally upon any Association which contemplate the construction of new works, or the alteration or extension of old ones.

The most satisfactory references can be given, if required, of the experience and commercial fairness which characterizes our dealings.

We would respectfully invite Western men to call and see our patterns and works here. MURRAY, BAKER & WALKER,
198-1y Fort Wayne, Indiana,

A Rare Opportunity for Investment.

TO AN INDIVIDUAL WHO CAN COMMAND $15,000 an opportunity will be afforded to take a position as Superintendent, with the entire control of the affairs of a company manufacturing an article of universal use and unlimited sale, upon which a profit of 100 per cent. can be made. The salary can be made $5,000 when the business is fairly started. The best of references required and given. Apply to the EDITORS of this Journal for particulars.

THE

AMERICAN GAS-LIGHT JOURNAL,

Published on the 2d and 16th of Each Month

At No. 22 Pine Street, New York.

M. L. CALLENDER & CO.,

EDITORS AND PROPRIETORS.

THURSDAY, JULY 2, 1868.

WISHING TO MAKE this Journal an organ of intelligent discussion to those of our readers who may wish to gain or give information on the subjects to which its columns are devoted, the publishers solicit letters from all among them who make the study of these subjects a pleasure, or a profession.

Subscribers would confer a favor upon us by remitting *CHECKS* or *POST OFFICE MONEY ORDERS*, as we are frequent losers where money is enclosed in letters.

☞ NEWS AGENCY.—The American News Company, 119 and 121 Nassau street, New York, are agents for this Journal. Newsdealers will please send orders to them.

CONTENTS

Isbell's Patent Vibrating Piston Engine..... 1
Oxygen 1
The Smoke Question..... 1
On Some New Experiments on Light..... 2
Some Experiments on the Application of the Measurement of Gases to Quantitative Analysis..... 2
Report of the New Albany Gas Works for May, 1868..... 2
A System for Keeping Books and Accounts of Gas Co.'s.. 3
An Artesian Well and Subterranean River..... 3
The Invention of Vulcanized Rubber..... 3
Estimation of Sulphur in Coal Gas 4
Composition Oil. 4
Absorption of Gases by Charcoal..... 4
Coal Mining in Japan..... 4
The Probable Exhaustion of the English Coal Mines..... 5
Reduction of Carbonic Acid to Oxalic Acid..... 5
CORRESPONDENCE—
Information for "Y. Z" and Others..... 5
Danger of Gasholders Exploding..... 5
The Proposed Convention . 5
Smedberg's Synopsis of Gas-Lighting 5
Manufacturing Items..... 5
Patent Claims..... 6
Whitewashing..... 6
Answers to Correspondents... 8
EDITORIALS—
Cheap Oxygen—Cheap Hydrogen.. 8
New Heading..... 9
A System for Keeping the Accounts and Histories of Gas Companies..... 9
The Gas Engineers' Convention 9
Oxygen Gas and Light Co... 9
Patent Lamps.....16
Negative Fluorescence and Phosphorescence.....16

Answers to Correspondents.

J. B., of Phil.—An assignment for a patent must have a five cent revenue stamp attached. A power of attorney requires to have a one dollar stamp.

T. A. L, of Ill.—"Heat as an action of matter" is not a new theory; it has only been demonstrated and fully admitted by the scientific world within a few years.

G. A., of N. Y.—Combustion, in the ordinary sense, is the rapid chemical union of oxygen with a combustible body, attended with an evolution of light and heat. Almost every species of combustion with which we are familiar is simply a process of oxydation. Combustion may occur, however, without the presence of oxygen—as instance antimony in powder, or thin copper leaf, if placed in chlorine, will cause a powerful chemical combination, with evolution of vivid light and heat. The result will be a chloride of antimony or copper.

T. P., of Ohio.—"Fire-damp" is the commen name given by miners to light carburetted hydrogen $C^2 H^4$. It is sometimes known as "marsh gas." The product of its combustion is mainly carbonic acid. Hence its deadly effect in mines when an explosion occurs, even when not otherwise injurious, the miners are suffocated.

S. A. L., of Mass.—"Gas carbon" occurs in the interior of retorts where coal-gas is distilled. It is a variety of graphite, and has a lustre resembling metal. It is one of the purest forms of carbon—a species of black diamond, and it has a hardness sufficient to scratch glass. Gas carbon is used as one of the elements in electric batteries; also for the electrodes in the production of the voltaic light.

F. P., of Cal.—The great bulk of ordinary gas *is* carburetted hydrogen. Good coals will produce at least, when distilled for gas, 13 of olifiant gas, 82·5 carburetted hydrogen, 3·2 carbonic oxyd, and 1.3 nitrogen. After the lapse of five hours the product consists of 7 olefiant gas, 56 carburetted hydrogen, 11 carbonic oxyd, 21·3 hydrogen, and 4·7 nitrogen.

CHEAP OXYGEN—CHEAP HYDROGEN.

The late efforts that have been and are being made by the inventive genius of both the Old and the New World, to simplify and cheapen the manufacture of oxygen and hydrogen gases, seems to have really succeeded in a measure. It is true that few things would have more important results in chemical technology than the cheap manufacture of oxygen and hydrogen gas. We always endeavor to keep our readers informed of the various methods proposed for attaining this desirable object, and have in former numbers of this Journal given the history of the "hydrocarbon process" for making illuminating gas, and the late improvements in it whereby a marvelously cheap illuminator is obtained. In this process (the "Gwynne-Harris") hydrogen can be made at a cost of less than 25 cents per 1000 cubic feet. A description of the late prominent improvements for producing cheap oxygen has also been given.

Among other improvements it was mentioned that M. Mallet discovered a cheap process to obtain oxygen by the action of air at a high temperature upon the protochloride of copper. In this case the mixture absorbs oxygen from the atmosphere, and is thereby transformed into an oxychloride. The simple increase of temperature 200 degrees expels the oxygen when the oxychloride is reduced to its former condition, and is ready to absorb more oxygen, and again throw it off as a continuous process. According to M. Dumas, 100 kilogrammes of protochloride of copper can be made to yield from 14 to 18 cubic meters of pure oxygen, at a cost of from 50 to 60 centimes.

This process has some resemblance to the process of MM. Tessié du Motay and Maréchel, lately patented in this country. The gentlemen who have the patent have exhibited the oxyhydrogen or Drummond light at 20 Nassau street, embodying some important novelties in the apparatus for burning the gas. The oxygen used, however, is obtained by the usual expensive process, costing about $130 per 1000 cubic feet.

This is because the necessary works to make the cheap gas is not yet erected; although we understand that plans for the works are being made by a prominent engineering firm in this city.

Instead of hydrogen they employ ordinary coal gas. It is contemplated in practice ultimately, however, we believe, to employ hydrogen, obtained by the decomposition of water.

THE CRAYON.—The improvement of most note in our estimation which these gentlemen have, is in the burner—the adjustment of the magnesium crayon or pencil, and the manner of its manufacture. It is said to last a week ordinarily, and reports from Europe state a later improvement has produced a pencil there that will last thirty days. If this is so, then one of the prominent mechanical difficulties in introducing the light is materially lessened. The best form we have seen it exhibited yet is what is called the "vermicil" pencil; which is in the form of a very small vertical cylinder, with one combined jet of oxygen and coal gas playing upon its lower extremity. This makes a light equal in photometric power to probably a 5-foot gas burner of 15 candle power, much more adapted to general use than the dazzling light generally exhibited. This crayon is agglomerated or compressed chloride of magnesium by the process of M. Carlevaris, we understand, and is very compact and more lasting than anything yet produced. Another material, the mineral known as "Zircon," has lately been employed for the crayon, which promises to surpass them all.

Now the next question that presents itself is cheap hydrogen; and that is easily obtained by the decomposition of water or steam as before stated, by the Gwynne-Harris process, and here we have the elements to produce heat and light at a cost so low, that the importance of the proposition is actually stupendous.

It seems a pity that it should be deemed necessary to resort to such laborious processes to obtain oxygen, when it is so universal—being one-fifth of the volume of the atmosphere which we breathe.

For carrying on all our metallurgical operations, for forging and smelting, for raising steam, and all purposes where heat is employed, a cheap gaseous fuel of this nature must be of the greatest importance, and capable of working a great revolution in political economy.

If nitrogen, the other element of the atmosphere, could be abstracted or separated by some cheap process, leaving the oxygen, then our supply of oxygen would be unlimited; and it is quite possible we have the secret of such a process, in the lately recognized scientific phenomena of atmospheric dyalysis.

If a thin septa, or film of caoutchouc, such as varnished silk, or the india-rubber, such as toy balloons are made of, is employed to confine air, it is impervious to air as gas, and is considered to have no porosity. But the same septa or film is capable of liquefying the individual gases of which air is composed, while in this condition oxygen and nitrogen are capable of penetrating the substance of the membrane, and may again evaporate into a vacuum and appear as gases. The interesting peculiarity of this phenomena arises from the fact that the gases are unequally absorbed and condensed by the rubber. The oxygen being passed through 2½ times more abundantly than nitrogen.

Hence the rubber may be employed as a sort of dialytic sieve for atmospheric air, and allows 46·6 per cent. of oxygen to pass through, instead of 21 per cent. usually present in air. This dialized air rekindles wood or other combustible where a spark even exists, and [phosphorous, fine wire of zinc or steel will burn in it with great brilliancy, and it has other characteristics approaching pure oxygen. But a repeated operation as above described will doubtless separate the nitro-gen entirely, leaving pure oxygen.

This seems to open a simple and efficient method of obtaining oxygen in sufficient quantity for the oxyhydrogen light, at a rate of cost quite below anything yet discovered, and is worthy of a trial.

If, according to to the process of MM. Tessié du Motay and Maréchal, oxygen can be produced practically on an extensive scale at a low cost, and sold to the public at a fair price, and the mechanical difficulties to its distribution and use overcome, as it no doubt will be in time, then its introduction in combination with hydrogen by the "Gwynne-Harris" process, or with ordinary coal gas, will work a wonderful revolution not only in our system of illumination, but in almost every art and branch of industrial manufacture; and we may safely anticipate at no distant day, when the demand for and consumption of these gases will be ten, twenty, aye, an hundred fold more than it is for the coal gas of to-day.

Since writing the above, we have observed an article in the *Herald* estimating that $1.11 worth of this gas, combined with 20 cents worth of coal-gas, will give light equal to 1000 cubic feet of ordinary gas.

Professor R. Ogden Doremus also has written an elaborate and interesting report speaking favorably of the light and its preculiar properties and the uses it can be put to. We shall have occasion to examine this subject of "oxygen gas-light" more in detail hereafter.

NEW HEADING.

Our patrons will observe we have dispensed with the additional title of "Mining and Petroleum Standard," which was taken up some three years ago by our predecessors. The original title is again resumed alone, because it is appropriate and avoids confusion.

The GAS-LIGHT JOURNAL will be devoted to the same interests and subjects as heretofore, and mining and petroleum will be duly considered; but we beg to be excused from the tiresome task of writing or asking others to write the prefix as heretofore. It is too much of a good thing—and it is not as significant as it once was. There is not the "magic in the name" that formerly caused imaginary visions to float before our eyes of stupendous gold and silver mining dividends, or certificates of stock in 40,000,000 barrel petroleum cataract wells. It is enough to keep pace with the positive advancements that do occur in these industries, and to keep our readers posted in general upon these subjects, as upon others the Journal professes to treat upon.

Let us remind our readers this is the first number of the volume, and those who intend to subscribe will find it to their advantage to commence now.

Regular subscribers will please observe that subscriptions are payable in advance, and it is hoped we have made the Journal sufficiently valuable; so they will not forget that *time's up.*

A SYSTEM FOR KEEPING THE ACCOUNTS AND HISTORIES OF GAS COMPANIES.

This work is gotten up by W. P. Fodell, Sec'y and Treasurer of the Northern Liberties Gas Co., Philadelphia, and is a compilation of forms for books, and directions for their use, and is intended to present a system that shall be at once plain, orderly, and full, from which reports and statements of the conduct of the works of any required nature can be made at any time.

The work is divided into four parts, each connected with the other, viz.:

Part 1.—Relating to the manufacture of gas—Superintendents' Department.

Part 2.—Relating to registration of consumers—Registrar's Department.

Part 3.—Relating to collection of bills—Receiver's Department.

Part 4.—Relating to stockholders—Treasurer's and Secretary's Department.

Any one or more of the books of each department might be used in the infancy of a work, without adopting the whole; or incorporated into a works already in operation.

Builders of gas works could put this book in the hands of a person of ordinary intelligence, enabling him to keep the history properly.

The work will also contain forms for constitution and by-laws, rules for transfer of stock and paying of dividends, permits, terms, etc., etc.

The author has had very considerable experience in, and given much time and attention to the subject.

Subscriptions will be received at this office. The price will be $3 00. When a sufficient number is obtained the work will be published.

EDITORIAL ITEMS.

We are pleased to learn that Jos. Todd, Esq, the able and efficient Superintendent of the Madison, Ind., Gas Works, at the last annual election for directors, was elected as a director to fill a vacancy; at a subsequent vote he was unanimously elected President of the Madison Gas-Light Co. Thus taking two rapid strides in advancement, which is an evidence of merit, doubtless as gratifying to his numerous friends as to himself.

GAS ENGINEER.—We desire to call the attention of gas companies or parties who are affiout to erect gas works to the card in another column "To Gas Companies." The party advertising has lately had the construction of a large work, and is in every way qualified for the duties involved in the erection of gas works, and the superintendence of the same.

We cheerfully recommend him to parties who need such services. Parties at a distance can have further particulars by addressing the Editors of this Journal.

NEW DIRECTORY.—Trow's New York City Directory, compiled by H. Wilson, for the year ending May, 1869. We find the present edition very complete, and quite up to the spirit of the times. No one doing business in New York can afford to be without this work. The amount of information it gives is really wonderful, and this edition especially is a credit to the energy and enterprise of the com piler.

THE INDEX to volume nine of this Journal will be issued with our next number.

THE GAS ENGINEERS' CONVENTION.

The suggestion of a correspondent, which will be found in a letter published elsewhere, that "either New York or Philadelphia" would be better places to hold the proposed Convention, is well worthy of consideration. There is no doubt a much more popular movement would result if one of the seaboard cities was settled upon as the place of rendezvous.

New York, as our correspondent justly remarks, has more attractions for almost every one in the interior, because they can find some other business besides the Convention to call them hitherward. The greater advantages and facilities that would be afforded to make such a Convention both interesting and instructive, if held in this city, are too apparent to require enumeration.

We hope to have all interested send a line stating what place they prefer, and we can in that way get the vote upon the question and make it known.

OXYGEN GAS AND LIGHT CO.

We learn that Messrs. Stern, Stevens & French have organized a company in this city, for the erection of experimental works for testing and developing the process of M.M. Tessié du Motay and Maréchal in producing oxygen for the oxygen light, and that all the stock has been taken already by a few prominent capitalists in this city, among whom is Mr. Benedict, the president of the Board of Gold Brokers, Jesse Hoyt, of Jesse Hoyt & Co., and Mr. Lockwood, of Lockwood & Co, the well known bankers and brokers on Broadway.

The works are commenced, and are expected to be in operation in September next. This certainly looks like business.

NOTICE.

We desire to obtain the following numbers of the GAS-LIGHT JOURNAL, to complete our files. Those of our readers who have the numbers mentioned below to spare, will confer a favor by communicating with us at their earliest opportunity, stating price. Also any one having full volumes to dispose of.

VOL. 4.—No. 64, Aug. 15, 1862; No. 67, Oct. 1, 1862; No. 70, Nov. 15, 1862; No. 74, Jan'y 15, 1863; No. 75, Feb'y 1, 1863; No. 80, April 15, 1863; No. 83, June 1, 1863.

VOL. 5.—No. 85, July 1, 1863; No. 86, July 15, 1863; No. 87, Aug. 1, 1863; No. 89, Sept. 1, 1863; No. 91, Oct. 1, 1863; No. 93, Nov. 1, 1863; No. 94, Nov. 15, 1863; No. 95, Dec. 1, 1863; No. 96, Dec. 14, 1863; No. 98, Jan'y 15, 1864; No. 99, Feb'y 1, 1864; No. 100, Feb'y 15, 1864.

VOL. 7.—No. 139, Sept. 15, 1865.

VOL. 8.—Oct. 2, 1866.

VOL 9.—Oct. 16, 1867; Jan'y 2, 1868; Feb'y 2, 1868; Feb'y 17, 1868.

J. S. PHILLIPS,

MINING ENGINEER, ETC.,

WADSWORTH HOUSE, SAN FRANCISCO,

Having had 33 years experience in the various departments of Mining, Engineering and Metallurgy, in Cornwall and America, solicits orders for the examination of Mineral properties throughout North and South America.

Minerals assayed and analyzed; instructions given for working refractory ores.

☞ *Reference to the AM. GAS-LIGHT JOURNAL.* (205

ASHCROFT'S

Patent Low-Water Detector,

FOR PREVENTING THE EXPLOSION OR

Burning out of Steam Boilers.

More than 7,000 of these Instruments now in use.

PRICE, $50.

The Detector insures your boiler against burning out or exploding, and against the collapsing of flues, which is caused by low water. JOHN ASHCROFT,

205tf 50 John-street, New-York.

REMOVAL.

THE

EMPIRE SEWING MACHINE COMPANY

HAVE REMOVED TO THEIR NEW STORE,

294 *BOWERY, Bet. HOUSTON & BLEECKER-Sts.*

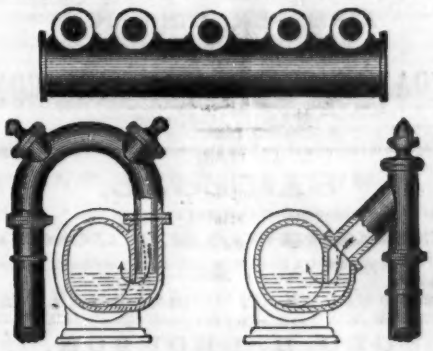
Their new Factory is now in full operation which will enable them to fill all orders promptly. Their improved No. 2 and No. 3 Machines for Family and Manufacturing purposes are not only equal but superior to any other machine in market.

EMPIRE SEWING MACHINE CO.,

294 *BOWERY, NEW-YORK.* (206

STANLEY'S PATENT

HYDRAULIC GAS MAIN.



Whiting's Iron Foundry,

Kemble Street, Boston, Mass.,

Near the Boston Lead Works.

Castings for Gas Works, Street Mains for Gas and Water, Columns for Buildings, and Castings of all kinds made to order.

L. F. WHITING, Proprietor.

P. O. Address, Boston, Mass. 204-1 yr.

GEO. STACEY. HENRY RANSHAW. WM. STACEY.

GEO. STACEY & CO.,

MANUFACTURERS OF

GASOMETERS,

Wrought Iron Roofs.

And all kinds of Wrought Iron Work used in the erection of Gas and Coal Oil Works, Wrought Iron Bridges for Railroads and other purposes, Wrought Iron Joists and Girders for Buildings, Bridge Bolts, Jails, and Cells, Etc.

Manufactory, Ramsay street, opposite O. & M. R. R. Depot,

CINCINNATI, O.

REFER TO:

Cincinnati Gaslight Company
Cleveland, O., Gas Company.
Davenport, Iowa, Gas Co.
Nashville, Tenn., Gas Co.
Madison, Ind., Gas Company.
R. T. Coverdale, Engr., Cin.
Springfield, Ill., Gas Company.
Baton Rouge, La., Gas Co.
Indianapolis Gas Company.
Dayton, O., Gaslight Company.
Lafayette, Ind., Gas Company.

Roofs covered with either Corrugated Sheet Iron or Slate. 1y

To Gas Companies or Contractors.

WANTED—BY A MAN OF THOROUGH PRACtical experience, a situation as Manager or Inspector of large works, or building of small works. Has a thorough knowledge of all branches connected with the above business, as well as gas-fitting. Can produce the highest testimonials from London, Dublin, and Cork as to capabilities and general moral character. All letters shall be promptly attended to by G. B. DUNNE,

204-tf Office Am. Gas-Light Journal.

Saving in Leakage, Saving in Labor, Saving in Lead.

THE MOST PERFECT CONNECTION FOR STREET MAINS.

ROBBINS' PATENT JOINT.

MANUFACTURED BY

GREAT WESTERN PIPE FOUNDRY,

Newport, Ky.,—T. G. Gaylord & Co., Proprietors, Cincinnati, O.

WEST JERSEY FOUNDRY,

Camden Rolling Mill Co., Proprietors.—Jno. W. Middleton, Agent, Phila., Pa.

EXTRACTS FROM TESTIMONIALS.

These pipes can be laid with much greater facility than the common joint, are tighter when laid, and more secure against any disturbance of the joint by action of time or other causes.
In my judgement, the Robbins Joint is superior to any mode yet presented for connecting gas mains. H. J. MILLER, Cincinnati Gas Company.

After using it extensively, and testing it thoroughly, I am fully persuaded that, as a connection for street mains, the "Robbins Joint" has no equal.
Its superiority consists of facility in laying, economy in time and lead, and, above all, its perfection as a Joint, thus saving largely in leakage. H. STACEY, Superintendent Indianapolis Gas Co.

We are entirely satisfied with the "Robbins' Patent Joint" for connecting our street mains. R. SALTER, Superintendent, Covington Gas Company.

All the pipe laid have been tested by hydraulic pressure, and carefully put down, mostly, with the Robbins Patent Joint.
Experiment has fully demonstrated that said Joint is entirely reliable, infinitely superior, and more economical than any other we have seen.—Annual Report of Sup't Cincinnati Water Works.

The experiment of laying the first lot of patent pipe has been concluded to my satisfaction. Your pipe layer laid 1200 feet in ten hours, notwithstanding numerous obstructions, such as rain, mud and water in the trenches, curves and crossings at intersections. E. W. BAILEY, Sup't Evansville Gas Company.

The quantity of Gas saved by using Robbins' Joint for street mains is of the utmost importance to gas companies.
R. T. COVERDALE, Gas Engineer.

As there is always a large difference between the quantity of gas made at the works, and the quantity for which the Company receives pay, any improvement that will reduce that loss must be very important to owners of Gas Works. We claim this desideratum for the "ROBBINS' JOINT."
The Manufacturers will contract with Water and Gas Companies to lay the Pipe in the trench, even under water, and guarantee the Joint to be absolutely tight.

BIRD, PERKINS & JOB,

IMPORTERS OF

COAL FOR GAS, STEAM AND IRON

MANUFACTURES.

Agents for the sale of the **Westmoreland** Coal Company's celebrated

GAS COAL,

and the Consolidation Coal Company's "Ocean Mine"

CUMBERLAND COAL.

Particular attention given to the charter of vessels at the lowest freights.

89 India Wharf, Boston. 104 Wall Street, N. Y. 184

GEO. H. BRONSON,

138 Maiden Lane, New York,

Dealer in

Paraffine Machinery Oil,

From Pure Cannel Coal, adapted to all classes of

Stationary Machinery,	Woolen Factories,
Locomotive Engines,	Cotton Spindles,
Railroad Cars,	Sewing Machines, &c.

Paraffine Wax and Paraffine Wax Candles. Also the best brands of Burning Oils. All Oils guaranteed to answer the purpose for which they are recommended.
57 80

McHENRY & CARSON,

CINCINNATI, OHIO.

Wholesale Dealers in

Gas Fixtures, Gas & Steam Fittings,

WROUGHT & CAST-IRON PIPE,

Gas and Steam Cocks, Valves, Etc.

Wet and Dry Gas Meters.

Also a Full Assortment of

PLUMBERS' MATERIALS.

GAS COMPANIES and dealers supplied with anything in the Gas, Steam or Plumbing lines at the lowest trade rates.

☞ SEND FOR PRICE LISTS. 196-6m

T. B. BYNNER,

IMPORTER AND DEALER IN WATCHES AND JEWELRY, Agent for the AMERICAN WATCH. Also every variety of Swiss and English watches, AT THE LOWEST MARKET PRICES.

189 Broadway, New-York.
Opposite John Street. 62-85

B. S BENSON,

MANUFACTURER OF

CAST IRON PIPES AND FITTINGS

FOR

GAS AND WATER MAINS.

All sizes from 3 to 30 inch cast vertically in 12½ feet lengths.
Office and Factory 52 East Monument street.
BALTIMORE MD. [184

Edw'd Van Orden & Co.,

Manufacturers of Fire and Water-proof

Plastic Slate Roofing Materials,

ROOFING TOOLS, &C.

Office 41 Liberty-st.

Edw'd Van Orden.
Jas. E. Dunn. NEW YORK.

MILLS CONVENIENT FOR SHIPPING.

D. B. GRAY,

DEALER IN ALL KINDS OF

INDIA RUBBER GOODS

Vulcanized Machine Belting,

Conducting, Hydrant, and Engine Hose,

GUM STEAM PACKING,

Amidon's Improved Clothes Wringer,

And all kinds of Useful and Fancy Rubber and Vulcanite Goods,

No. 201 Broadway,

Middle of the Block between Fulton and Dey Streets, NEW YORK.

WILLIAM S. CARR & CO.,

Successor to Sawyer & Co.,

SOLE MANUFACTURERS OF

Carr's Patent Water Closets,

URINAL VALVES, &c.

Also Manufacturers and Dealers in PLUMBING MATERIALS OF EVERY DESCRIPTION, Plumbers' Brass Works, Earthen Ware, Pumps, Iron Drain Pipes, Traps and Sinks, Copper Bath Tubs, Showers, &c., &c.

OFFICE AND MANUFACTORY

149, 151, 153, 155, 157 Centre Street, cor. Canal,

NEW YORK.

Illustrated Catalogue and Price List sent on application.
152-176

JAMES HOY. JNO. P. KENNEDY. WM. E. HOY.

HOY, KENNEDY & CO.,

Engineers and Contractors

FOR THE ERECTION OF

GAS WORKS,

Extensions, and Improvements, are prepared to supply

GAS-LIGHT COMPANIES

With all the materials used by them. [77-t

No. 111 Liberty street. New York.

JOHN P. NESSLE. JAMES A. TAYLOR.

Nessle & Taylor,

MANUFACTURING ENAMELERS

OF

IRON AND OTHER METALS.

97 Water street, Brooklyn. 171tf

JOSEPH NASON & CO.,

No. 61 Beekman street, corner of Gold,

NEW YORK.

Manufacturers of WROUGHT IRON PIPES and Fittings for Steam, Gas and Water, Boiler Flues, Steam Boilers, Coils, Heaters, Evaporators, Pumps, Ventilating Machinery, and Apparatus for Warming Buildings by Steam and Hot Water.

OIL TUBING, CAST IRON DRIVING PIPE,

Boring Tools, Oil Pumps, Sand Pumps, Stuffing Boxes, Tongs, Clamps, Swivels, Joints, &c. 131

J. H. TIEMANN.

ANALYTICAL CHEMIST,

Metallurgist & Mining Engineer.

☞ GOLD AND SILVER BOUGHT.

240 PEARL ST. Cor. BURLING SLIP, N. Y.

tf

CHAS. HOWDON SMITH,

BROKER IN MINING STOCKS

AND OTHER SECURITIES,

No. 5 1-2 Pine Street,

ROOM NO. 5, NEW YORK.

THOS. CASSIDY & CO.,

(SUCCESSORS TO P. CASSIDY,)

Dealers in Old and New

IRON, COPPER, BRASS,

LEAD, SPELTER, &c.

Corner of Bridge and John Streets,

BROOKLYN.

☞ N. B.—The highest cash price paid for the above named articles.

T. CASSIDY. 57-80 J. PEARCE.

J. W. WHEELOCK,

DEALER IN

GASOLEINE.

SUITABLE FOR GAS MACHINES, ALSO FOR CARBURETTING OF GAS, &c.

70-94 **204 Pearl St., New York**

The Cameron Coal Co.,

MINES LOCATED AT

Cameron, Cameron county, Pa.

New York Office, 42 Broadway.

S. L. SIMPSON, President.

DIRECTORS:

Fletcher Westray,	Paul Spofford	Wm. A Sale,
S. L. Simpson,	J. J. Crane,	Richard Warren,
Lawrence Myers,	Samuel N. Pike,	John L. Rutgers.

The Company are prepared to fill orders at the lowest possible prices for their Coal, which BY ACTUAL TESTS PROVES TO BE EQUAL TO ANY OTHER BITUMINOUS COAL MINED FOR GAS PURPOSES, and is equal to any in use for Locomotives and steam purposes generally.

MANHATTAN

Fire Brick & Enamelled Clay Retort Works,

MAURER & WEBER,

(Of the late firm of B. Kreischer & Co.)

PROPRIETORS.

Office & Works in 15th street, Avenue C,

MANUFACTURERS OF

Fire Brick and Tiles,

OF ALL SHAPES & SIZES,

Fire Mortar, Clay and Sand.

☞Articles of every description made to order, at short notice. (135

HY. MAURER. ADAM WEBER.

NEW YORK

Fire Brick and Clay Retort Works

☞ *Established in* 1345. ☜

(Branch Works at Kreischerville, Staten Island.)

B. KREISHER,

Office 56 Goerck St, cor. Delancey, New York.

GAS RETORTS, TILES and FIRE-BRICK of all shapes and sizes. FIRE MORTAR, CLAY, and SAND.

Articles of every description made to order at the shortest notice.

B. KREISCHER.

JOSEPH K. BRICK, EDWARD D. WHITE.

J. K. BRICK & Co,

BROOKLYN CLAY RETORT, AND FIRE BRICK WORKS,

VANDYKE STREET, BROOKLYN, N. Y.

J. H. GAUTIER & CO.,

MANUFACTURERS OF

Gas Retorts, Tiles and Fire Bricks,

Black Lead Crucibles, and Carburet of Iron Stove Polish,

JERSEY CITY, N. J.

Refer to—Manhattan Gas Light Co., New York. [135

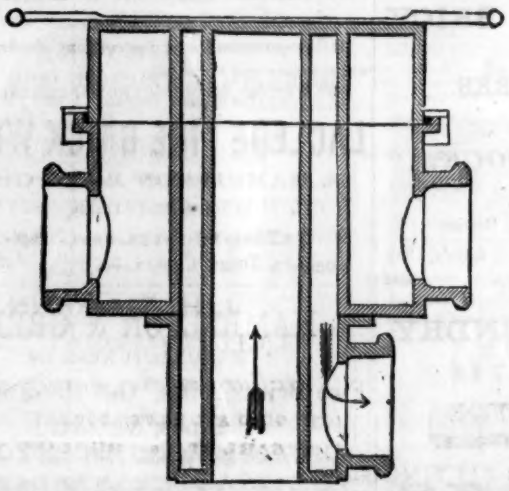
Philadelphia Fire Brick Works,

Corner of Vine and Twenty Third sts., Philadelphia,

JOHN NEWKUMET,

Manufacturer of all kinds of FIRE-BRICK, GAS-HOUSE TILES, to suit all the different plans in use. Clay Retorts and Dentist Muffles. Orders filled at short notice.

PATENT DRY CENTRE VALVE.



The **American Meter Company** invite the attention of Gas Engineers and Gas Light Companies to the PATENT DRY CENTRE VALVE, which is very superior to the HYDRAULIC CENTRE VALVE, and much more durable, besides being less expensive, and not likely to leak or get out of order. It has been successfully introduced at the following Gas Works, where reference may be had of its satisfactory performance:

Detroit, Mich.....	16 inch.	Louisville, Ky.....	6 inch.
Philadelphia, Pa....	12 "	Covington, Ky.....	6 "
Patterson, N. J.....	12 "	Zanesville, Ohio.....	6 "
Pittsburg, Pa.....	10 "	Indianapolis, Ind.....	6 "
Cleveland, Ohio.....	8 "	St. Joseph, Mo.....	4 "
Bloomington, Ill.....	8 "	Maysville, Ky.....	4 "
Meadville, Pa.....	6 "	Troy, Ohio.....	4 "

Having the Patterns complete for each size, from four inches to sixteen inches, we are prepared to furnish them at short notice.

AMERICAN METER COMPANY,

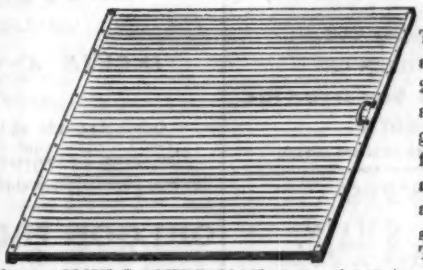
512 West 22d Street, New York.

22d and Arch Street, Phil'a.

73-tf 23 West Street, Boston.

JOHN L. CHEESMAN,

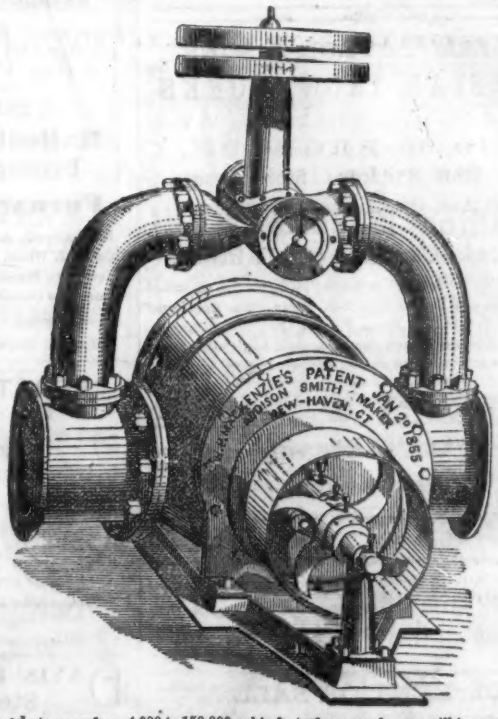
MANUFACTURER OF PATENT CONICALLY SLOTTED SOLID WOOD TRAYS.



☞ The advantages of these Trays over those made of iron, are economy (they being over 200 per cent cheaper than iron, and will last twice as long), a greatly increased purifying surface, and a saving of time and and labor in removing the lime, as it does not adhere to the smooth surface of the Wood Trays, as is the case with the iron. JOHN L. CHEESMAN, 147 and 149 Avenue C., New York.

Smith & Sayre Manufacturing Company.

The Mackenzie Patent Gas Exhauster, AND PATENT COMPENSATOR.



They are made to pass from 4,000 to 150,000 cubic feet of gas per hour; will increase the production and illuminating power of the gas, and add very much to the durability of the retorts, either clay or iron. The Compensator obviates entirely the necessity of water-joints, is compact, durable cleanly, not liable to get out of order, self-acting, quiet, and certain in its operation.

We are also sole proprietors and manufacturers of the

MACKENZIE PATENT BLOWER, PATENT CUPOLA AND SMELTING FURNACE.

The Blower is a Force Blast machine, durably built, and can be driven with one-third the power required to drive the ordinary Fan. The Cupolas are manufactured in sizes to melt from 1 ton to 20 ons per hour, will save one quarter of the time required by the old style Cupola, and 33 per cent. fuel. Address

B. KREISCHER., Prest.

JAS. SAYRE, Treas,

CHAS. W. ISBELL, Sec'y Office, 95 Liberty street, New York.

PRINCE'S METALLIC PAINT.

AN INDESTRUCTIBLE COATING FOR

IRON, TIN, and WOOD.

It consists of seventy-two parts Oxide of Iron, and twenty-eight parts Cement Lime Stone in the one hundred pounds.

It has much more body than red or white lead. It is warranted perfectly water and fire-proof and to withstand a greater heat on metals, without scaling, than any other paint in use.

It is a perfect cover for all kinds of iron, tin, or wood-work, out-houses, and canvas coverings. It prevents and arrests the corrosion of metals, and is not affected by the action of salt, gases, acids or ammonia.

It hardens under water, as has been fully demonstrated by its application to gas-holders, by many of the largest gas companies in the United States; which companies having thoroughly tested its properties as herein claimed, pronounce in its favor over any other paints in the market, even though said at double its price.

As a coating for patterns of iron or wood, when mixed with shellac, it is much superior to beeswax, oil, or shellac alone, as has been proven at the large founderies in the country.

For patching boilers and making joints, it is considered superior to red lead, or any other preparation.

For cleaning metals it takes the place of crocus, ouge, and emery, being better and cheaper.

This Paint requires no more oil than dry lead or zinc, and much less than the ordinary mineral aints. It is free from any waste, and possesses a spreading and covering power unequaled.

Terms, by the Barrel or Half Barrel, Five Cents per Pound.

A liberal discount made to parties purchasing by the ton.

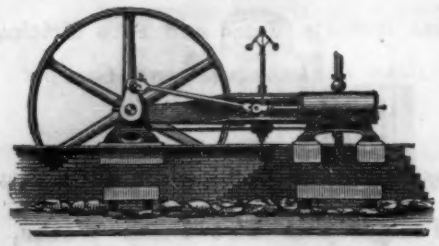
A Barrel or Ton will be forwarded to any gas companies desirous of testing its qualities, for which there will be no charge if it does not give entire satisfaction as being the cheapest and most durable of all other Paints in the market.

Also, Prince's Imperial Black Paint, and Prince's Protoxide of Iron.

DANIEL SLOAN & CO., General Agents,
115 LIBERTY STREET, NEW YORK.

ERIE BASIN IRON WORKS

MANUFACTURERS OF



Babcock & Wilcox Patent Variable Cut-off

STATIONARY STEAM ENGINES,

These Engines are conceded to be superior to all others in ECONOMY OF FUEL and REGULARITY OF MOTION and in NON-LIABILITY TO DERANGEMENT; will save from 25 to 50 per cent. over any Engine in this market.

Flue and Tubular Steam Boilers, Tanks, Oil Stills, Mill Work, Machinery, etc., etc.

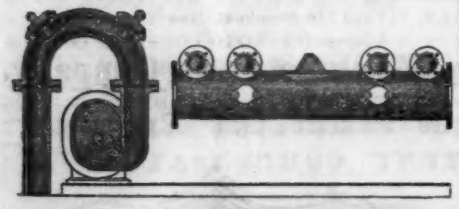
OFFICE AT THE WORKS ON

Elizabeth, Dwight and Van Dyke Sts.,

SOUTH BROOKLYN

☞ Repairs done on Steamers at short notice.

STANLEY'S HYDRAULIC GAS MAIN.



WILLIAM TAYLOR & SONS,

COLUMBIAN IRON WORKS,

Nos. 11, 13 & 15 Adams Street, Brooklyn, N. Y.

MANUFACTURERS OF ALL KINDS OF

Castings, Iron Buildings Store Fronts, Columns, Girders and Beams.

ALSO,

Gas Works Castings of all kinds.

Steam Engines, Mill Gearing, Hydraulic Presses for the manufacture of Linseed and Cotton Seed Oils, Sugar Mills, Single and Double Action Pumps, also Steam Pumps, Coal Oil Machinery, High and Low Pressure Boilers, Tanks, Kettles, Soap Curbs, &c.,

MADE AND REPAIRED AT THE SHORTEST NOTICE.

WM. TAYLOR. JAMES A. TAYLOR. EDWIN S. TAYLOR.

Worthington's Steam Pump,

Extensively used by

GAS-LIGHT COMPANIES,

For sale at greatly reduced prices. Also, a new and highly successful Pump, driven by water pressure, requiring no attention or repairs, and the most economical water motor yet constructed.

☞ Patent GATES for Water and Steam-stops. ☜

HENRY R. WORTHINGTON,
61 Beekman-st, New York.

61

FOR RENT OR SALE.

THE PROPERTY FORMERLY OCCUPIED BY the BALTIMORE WROUGHT IRON PIPE AND TUBE CO., situated in the City of Baltimore, Md., together with the Steam Power, and Machinery, for manufacturing wrought iron Tubes, etc. Will be leased or sold on favorable terms. Apply at the Office of the GAS-LIGHT COMPANY, of Baltimore. 200-2

FOR SALE CHEAP.

AT THE GAS WORKS, WASHINGTON, D. C., a 100,000 feet Holder—with centre post 80 feet diameter, 20 feet deep, and in good condition. For further information, address GEO. A. McILHENNY, Engineer Washington Gas Co. 198 4

A SYNOPSIS OF

BRITISH GAS LIGHTING

[To be Published August 1.]

"WINNOWED—The wheat carefully preserved, and the chaff thrown away."

This work will comprise the essence of the London *Journal of Gas Lighting*, from February 10, 1849, to December 31, 1867, and afford a succinct resume of the entire English Gas Engineering between these dates.

The excerpts will, as far as possible, be symmetrically arranged under the heads of Coals, Distillation, Purification, Volumetry and Photometry

It is to be executed by JAMES R. SMEDBERG, Engineer San Francisco Gas-Light Company. Subscriptions should be addressed to the offices of the AMERICAN GAS-LIGHT JOURNAL, 22 Pine-st, New York.

It will be issued only to subscribers.

It will be of great value, not only to Gas Companies and Engineers, but to those who represent the enormous collateral interests of Gas-Lighting—to Chemists, Gas Fitters and Patentees, as well as to scientific men generally.

The work will not be published until 200 subscriptions are received. Subscription price, $15.

BAY STATE FIRE BRICK

—AND—

CLAY RETORT WORKS.

CHELSEA, MASS.

DAVIS & CHADDOCK,

MANUFACTURERS.

Office Nos. 125 and 127 Water-st., Boston.

Also agents for the sale of J.K. BRICK & Co's, Clay Retorts, Fire-Brick, Gas-House tile, etc. 66tf

---

OREGON IRON FOUNDRY,

738, 740, 742 and 744,

Greenwich Street, New York.

CASTINGS FOR

GAS WORKS

OF ALL DESCRIPTIONS, INCLUDING

Purifiers, Exhausters, Compensators, Self-Acting Valves, Branches, Bends, &c.

FLOYD'S PATENT

Malleable Iron Retort Lid.

SABATTON'S PATENT

Furnace Door and Frame.

REFERS TO—J. A. Sabattan, Esq., Engineer Manhattan Gas Co—Col. A J. White, Metropolitan Gas Co.—C. C. Mowten, Engineer New-York Gas-light Co.—J. Mowten Saunders, Engineer Baltimore Gas Co.—John T. Harrison, Engineer Savannah Gas Co.

.96] HERRING & FLOYD, Proprietors

SILAS C. HERRING. JAMES R. FLOYD

HEALTH AND ECONOMY.

PATENT LEAD-INCASED TIN PIPE COSTS LESS THAN LEAD PIPE AND IS MUCH STRONGER.

PURE WATER.

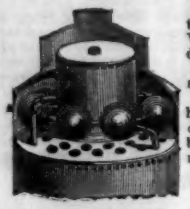
INDORSED BY PHYSICIANS AND WATER COMMISSIONERS EVERYWHERE.

Recent improvements enable us to supply this pipe at a less price per foot than common lead pipe. To furnish the cost we should know the head or pressure of water and bore of pipe.

Pamphlets sent free. Address the

COLWELLS, SHAW & WILLARD M'FG CO.,
184) Foot of West Twenty-seventh st., New York.

DAVIS' PATENT SAFETY Steam Superheating Boiler,



Requires only 25 lbs. of coal per day to the horse-power. Are made of the VERY BEST IRON, double lapped and double riveted.

Being upright, occupy little space, and are easily cleaned.

Without additional fuel, the Superheater increases the working capacity of the steam 25 per cent., which has been fully demonstrated by the many now in use. (See illustrated circulars).

Address the

DUPLEX STEAM BOILER MF'G COMP'NY
Long Island City, N. Y.

Professor HENRY WURTZ,

Formerly Chemical Examiner in the U. S. Patent Office, may be employed professionally as a SCIENTIFIC EXPERT. Geological Examinations and Reports, Analyses and Assays etc. etc., Practical Advice and Investigations in the CHEMICAL ARTS and MANUFACTURES. Invention and Examination of new chemical methods and products. Address 26 Pine street, rooms 35 and 36. Always in at 1 P. M.

☞ WRITTEN COMMUNICATIONS PREFERRED.

IMPORTANT TO GOLD AND SILVER MINERS AND COMPANIES.

PROFESSOR WURTZ,

Who is the inventor and Patentee of the new and wonderful uses of

Sodium in Working Gold and Silver Ores and Jewelers' Sweepings,

Will furnish at the above address information relating thereto together with experimental packages of

SODIUM AMALGAM

TO PARTIES ENGAGED IN MILLING ORES ONLY.

All preparations and instructions elsewhere obtained are spurious and unreliable.

☞ WRITTEN COMMUNICATIONS PREFERRED. (1-tf

LACLEDE FIRE BRICK WORKS,

S. HAMBLETON & JAS. GREEN,

PROPRIETORS,

Cheltenham. Mo.

Office, No. 1007, North Levee,.....St. Louis,

HAMBLETON & GREEN,

MANUFACTURERS OF

Fire Bricks, Tiles, Gas Retorts, Sewer Pipes, &c., &c.

Have on hand a good assortment of articles in their line, of a very superior quality, manufactured by them from the celebrated Fire Clay of Cheltenham, and for sale at reasonable prices and in quantities to suit,

AMONG WHICH ARE

BOILER TILES, Centre and Side of all sizes.

BRIDGE TILES, 6x12, 12x12, 12x18 and 12x24 inches.

CIRCULAR BACK TILES, all sizes.

FIRE BRICKS, Square, Arch, Split, Soap, Pressed, Jamb, Wedge, Key, Bull Heads Cut, &c., &c.

BLAST FURNACE LININGS, Bosh Brick and Timp Tile.

CHIMNEY TOPS, Fancy and Plain.

SEWER PIPES, all sizes.

GAS AND BONE RETORTS.

GROUND FIRE CLAY, &c.

Orders left at the office, No. 1007 Levee, between Washington and Carr streets, will receive prompt attention, and goods delivered without delay,

Purchasers can depend upon all articles purchased from us being equal, if not superior, to any other made in the country. (1-1y

---

P. J. MOORE. T. L. GAUSSEN, Late Inspector Cin. Gas Co.

MOORE & GAUSSEN,

Plumbers, Gas and Steam Fitters,

221 West Fifth street, Between Elm and Plum, CINCINNATI, OHIO.

WESTERN AGENTS FOR HARRIS & Co.'s PHILADELPHIA GAS-METERS, &c.

All Orders Promptly Attended To.

THE AUBIN BALANCED

VALVE WATER METER,

(Used also for Oils and Liquors)

IS NOW IN USE BY MANY CITY WATER Companies, because of its LOW PRICE, SIMPLICITY, DURABILITY, ACCURACY UNDER ANY PRESSURE, and, (a great advantage,) because it runs with less head than any other meter used.

Manufactured by

H. Q. HAWLEY,
Albany, N. Y.

GAS STOVES AND HEATERS.

HEATER NO. 3. HEATER NO. 4.

PARLOR HEATER.

METROPOLITAN

Odorless Gas Heating and Cooking STOVES AND RANGES.

A. L. Bogart's Patent, Nov. 26, 1867.

The only inodorous Gas Heaters made in the world.
Salesroom, 702 Broadway, fourth door above Fourth st., N. Y.

NATIONAL FOUNDRY AND PIPE WORKS.

Office and Works—Carroll, Pike, Smallman and Wilkins Streets,

PITTSBURGH, PA.

WM. SMITH,

Manufacturer of all kinds of GAS and WATER PIPE, BRANCHES, CONNECTIONS, T's, ELBOWS, and ALL CASTINGS USED AT GAS AND WATER WORKS.

I offer special inducements to parties wishing to purchase, my Pipe is Smooth, regular in weights, and cast vertically.

N. B.—Pipe from 3-inch and upwards, cast in 12-ft. lengths.

☞ SEND FOR CIRCULAR AND PRICE LIST. ☜

149

BENNETT, JOHNSON & CO.,

42 DEY STREET N. Y.,

Manufacturers of the

NEW PATENT BAG-HOLDER

AND SHINGLE BRACKET.

This BAG-HOLDER is emphatically the FARMERS and GRAIN DEALERS FRIEND. Does the work of two boys in holding a bag open, and with it a farmer can bag up grain, potatoes apples, etc., as fast as two men in the ordinary way. It has large sales at the West, where first introduced. Retail price $5. Sent to any address.

THE SHINGLE BRACKET

Is especially adapted for Builders, house Joiners, Masons, and Carpenters. With it a scaffolding can be built in less time upon a roof and with greater safety, and taken down as quickly, without leaving a single nail hole in the roof. Retail price $6 per dozen. Send for illustrated circulars as above. Orders promptly filled, at wholesale and retail.

Manufacturers of the

NEW STEAM COOKING APPARATUS,

which cooks all vegetables and meats together, without flavoring each other, and does away with all offensive odors. SAVES LABOR, FUEL AND TIME.

SEEING IS BELIEVING.

One trial will convince any one. Large numbers now in use and everybody pleased; sold low; several sizes—fit any stove—a whole dinner can be cooked on one stove-hole. Orders promptly filled, at wholesale and retail. Send for an illustrated circular, with full particulars. Retail price: 7 in. $4; 8 in. $5; 9 in. $7; 10 in. $10. Sent to any address on receipt of price.

H. BROWN'S PATENT Metal Top Lamp Chimney,

First Quality Extra Annealed Glass

Will not crack or break from sudden changes of temperature, is readily cleaned, and with ordinary care should last just as long as he lamp on which it is used. Liberal discount allowed to the rade. Samples sent on receipt of fifty cents.

CHAS. H. REICHMANN, Sole Agent,
189 45 Fulton-street, New York.

F. H. LOVELL & CO.,

Successors to Alfred Bliss & Co.

MANUFACTURER AND JOBBERS OF

KEROSENE

LAMPS

CHANDELIERS,

BRACKET,

AND

Lamp Trimmings

GENERALLY.

Station, Sugar House, Street and Coal Oil Lanterns.

No. 233 Pearl Street,

159-182 *NEW YORK.*

Illustrated catalogues and price lists furnished on application.

PLASTIC SLATE ROOFING

JOINT STOCK COMPANY.

OFFICE 157 [Room 19] BROADWAY,

New York.

W. C. POTTER, Vice Pres't.
J. M. ALLEN, Sec. and Treas. LICENSES GRANTED.

PLASTIC SLATE

FOR

ROOFING & OTHER PURPOSES.

The process of reconstructing Slate Stone from a disintegrated state was

PATENTED FEBRUARY 21st, 1865.

It is a combination of

Pulverized Slate & Viscous Matter,

(the latter possessing qualities of geological and chemical affinity for the former,) and is a development of one of the simple but unalterable tendencies of nature.

As a Roofing Material it Stands Unrivalled.

A mastic—it adapts itself to every shape and slope. Non-combustible, impervious, non-expansive, and undecaying.

Frost does not Crack nor Heat Dissolve it.

The only roofing material ever discovered that will resist the action of the elements as long as the structure it protects. Being susceptible of little, if any wear, from exposure, and

Perfectly Fire-Proof,

It is unequalled as a coating for Railroad and Farm Buildings Fences, Bridges, bottoms of Vessels, Vaults, etc.

GAYLORD PATENT COUPLINGS,

Fig 3

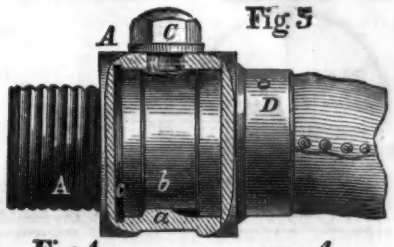
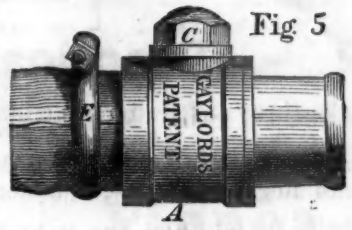


Fig 4

Fig 5



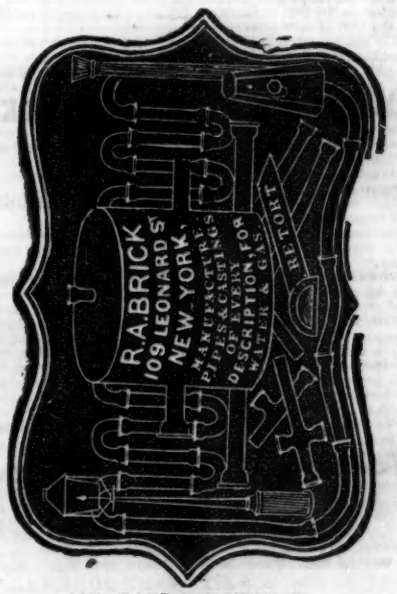
FOR

Hose, Engines, Hydrants, Ships, Steamboats, Steam, Force and Garden Pumps, Faucets for Public and Private Buildings, Gas and Water Pipes, Hose Pipes and Hose of all description, etc.

MANUFACTURED ONLY BY

Address GAYLORD COUPLING CO.,
J. R. TEWKSBURY, Sec'y.
185 19 Dey street, New York.

DRIVING PIPE,



BERGEN IRON WORKS,

OFFICE, 109 LEONARD STREET, NEW YORK.

AND BANDS COMPLETE.

BROOKLYN TUBE WORKS.

B. T. BENTON,

MANUFACTURER OF

WROUGHT IRON AND GALVANIZED

TUBES,

For Steam, Water, or Gas.

MANUFACTORY AND OFFICE,

Corner John and Adams Street, Brooklyn

ALSO

58 John Street New York. 171

THE AMERICAN METER CO.

Organized under the General Manufacturing Laws of the State of New York

SAMUEL DOWN, President. HENRY CARTWRIGHT, Vice President. RICHARD MERRIFIELD, Secretary and Treasurer

Trustees.

SAMUEL DOWN, WILLIAM HOPPER, R. H. GRATZ, HENRY CARTWRIGHT, RICHARD MERRIFIELD.
THOMAS C. HOPPER, *Superintendent at Philadelphia.*

This Company is now prepared to furnish WET AND DRY GAS METERS, STATION METERS, GOVERNORS, PRESSURE INDICATORS AND REGISTERS, SERVICE and METER COCKS, and all other articles in their line appertaining to the use of Gas-Works.

The combination of Mechanical and Scientific Skill, and the long experience of the several members of the Company, is a sure guarantee of durability, accuracy and excellence of workmanship. Orders addressed

AMERICAN METER COMPANY,

West Twenty Second Street, New York. Arch and Twenty-Second Streets, Philadelphia. No. 23 West Street, Boston will meet with prompt attention.

HARRIS & BROTHER,

Practical Gas Meter Manufacturers,

Continue as heretofore at the OLD ESTABLISHMENT, Nos. 1115 and 1117 Cherry Street, Philadelphia,

To manufacture Wet and Dry Gas Meters, Station Meters, Experimental Meters, Meter Provers, Centre Seals, Governors, Pressure Registers, Guages, Indicators, Photometers, and all kind of Gas Apparatus; also furnish all other Articles appertaining to the use of Gas Works.

From our long Practical Experience of the Business (covering a period of 20 years) and from our personal supervision of all Work, we can guarantee all orders to be executed promptly, and in every respect satisfactorily.

J. Wesley Harris, Washington Harris, Wm. Wallace Goodwin.

PROSPECTUS

OF THE

Literary Journal of Science and Art.

It is proposed to publish monthly, a Literary and Scientific Journal for the people, bearing the above title, to issue the initial number on the 15th of January, 1868, and continue its publication on the 15th of each succeeding month.

The special object in view is to supply a publication of the most important items of scientific news of the times, at a price that will place it within the reach of every person who has any interest in the material affairs of life, with which he is surrounded, and any desire to investigate their operations and co-ordinate relations.

The Journal will consist of eight folio pages of reading matter, embodying ORIGINAL COMMUNICATIONS, and SELECTIONS from our most popular American and Foreign magazines, FORMULÆ, and NOTICES OF BOOKS, on subjects that come within its province.

Its subsequent enlargement will depend upon the extent of its circulation.

Each issue will contain a leading article calculated to interest and amuse the young.

Communications on Agriculture, Manufactures and Mechanics.

On CHEMISTRY, as applied to Agriculture and the daily concerns of life.

PHARMACY, as applied to the preparation of drugs, perfumery, and the adulteration of all substances that enter into pharmaceutical products, or food.

MEDICAL SCIENCE, as contra-distinguished from the sophistry, false pretensions, and the fascinations of fiction, so characteristic of quackery, and nostrum-vendition, etc. In fine, on the current literature of the day.

In promotion of the objects for which the Journal is published, the editors respectfully solicit short essays upon all the topics to which reference has been made.

The Literary Department of this Journal will be conducted by X. T. Bates, M. D.

The Department of Chemistry, by Prof. H. Dussauce.

The subscription price has been fixed at the low rate of 25 cents per annum.

For clubs of 5 sent to one address, one extra copy will be given.
" " 10 sent to one address, two extra copies will be given.
" " 20 sent to one address, two extra copies and "Supplement to Journal of Materia Medica" will be given.
All business letters should be addressed to

"*LITERARY JOURNAL,*"
New Lebanon, N. Y.

195-tf

PREMIUM GAS STOVES.

New, Cheap, Clean, Simple, and Healthful.

No odor, no dirt, no soot, no ashes, no coal box, no punching and renewing fires.

THE CAMBRIDGE GAS STOVE.

This truly scientific invention received the premium at the State Fair at St. Louis, and is being introduced at the West, and also in the New England States with great success. Certificates of its excellence and superiority from some of our most scientific and influential men have been voluntarily given, and will be furnished upon application.

These stoves may be seen in operation at Messrs. Ford & Murray's, 58 East Thirteenth street, or at No. 22 Pine street, Room 10, where information may be obtained.

A PRACTICAL TREATISE OF THE

Manufacture and Distribution of

COAL GAS,

Its Introduction and Progressive Improvement, Illustrated by

Engravings from Working Drawings,

With General Estimates by

SAMUEL CLEGG, Jr.

LONDON: Trubner & Co., 60 Paternoster Row.
D. VAN NOSTRAND, 192 Broadway, New York. 199

GAS-WORKS FOR SALE—IN A THRIVING town, only a few miles from New York City, and not long in operation. Can be largely increased, and now running above 200 meters. Three miles of Gas Main now laid through the town. Works in excellent order, and will be sold on reasonable terms to a cash purchaser, or an exchange will be entertained for *good* State or County Bonds.

For further information apply to COL. J. A. SABBATON,
68-81 Manhattan Gas-works, New York City.

OSBORN MANUFACTURING COMPANY,

109 Bleecker street.

Patent Bird and Animal Cages. *No Paint* used in their construction.

VERMIN PROOF! ALL METAL!

Received highest premium at the Fair of the American Institute and N. Y. State Fair of 1867. Trade supplied.

198-9m Salesroom 109 Bleecker street, New York.

BABCOCK & WILCOX'S

Patent Stationary Steam Engines

From 25 to 1,000 horse-power, built in the best manner and at the shortest notice by the

South Brooklyn Steam Engine and Boiler Works,

Imlay, Summit, and Van Brunt sts., Brooklyn, N. Y.

☞ Over 4,000 horse-power of these engines are now running and contracted for. D. McLEOD, Proprietor. (188

W. ANDERSON,

MANUFACTURER OF

GAS BURNERS,

NEW HAVEN R.R. DEPOT,

Corner Franklin and Elm sts., (up stairs), - - - - - - - - NEW YORK.

First quality Scotch Union Jets, Improved Cylinder Burners, Plyers and Burner Pillars. Burner Tips made to order. [876m

PARTNER WANTED.

THE MEDINA GAS COMPANY, OF MEDINA Orange county, N. Y., would like to get a partner to help to enlarge the works, so as to meet the demands of the town Capital required from $6,000 to $10,000. Address
196-tf WM. BENT, Sup.

GAS-LIGHT JOURNAL AMERICAN AND FOREIGN PATENT AGENCY.

M. L. CALLENDER & CO., Proprietors of the AMERICAN GAS-LIGHT JOURNAL, having perfected arrangements, are now prepared to offer their services to inventors as Solicitors of

American and Foreign Patents.

We have associated with us parties who have been directly connected with the Patent Office for many years, and have acquired an experience in Patent matters of over *twenty* years.

We have also unusual facilities for obtaining Patents in the various European countries with *certainty and despatch.*

Oral and written opinions as to whether inventions contain features of patentable novelty, will be given upon personal or written application, *free of charge.*

We supply finished drawings by the best artists, and where necessary the model also. A circular, containing a list of fees and other valuable information as to the preliminary steps to be taken in obtaining Patents at home and abroad, will be furnished by addressing

M. L. CALLENDER & CO.
Solicitors of Patents, 22 Pine street.

SABBATON'S

PATENT

SCREENING SHOVEL

For Gas Works, Coal Miners and Dealers, Machinists, Steamboats, Locomotives, Stoves, Etc., Etc.

A. T. Smithe,
SOLE AGENT, 126 MAIDEN LANE,
NEW YORK.

BABCOCK & WILCOX'S

Patent Stationary Steam Engines,

BUILT BY THE

Hope Iron Works, Providence, R. I.

Warranted superior to any other Engine in the market for economy of fuel, regularity of speed, and non-liability to derangement.

188 JOS. P. MANTON, Agent.

THE AUBIN BALANCED

VALVE WATER METER,

(Used also for Oils and Liquors)

Is now in use by many City Water Cos., because of its low price, simplicity, durability, accuracy under any pressure, and (a great advantage) because it runs with less head than any meter used. Manufactured by H. Q. HAWLEY, Albany, N. Y.

MORRIS, TASKER & CO,

PASCAL IRON WORKS

[ESTABLISHED 1821,]

PHILADELPHIA,

Manufacture Wrought Iron Welded Tubes for Gas, Steam or Water; Lap-Welded Boiler Flues, GALVANIZED WROUGHT IRON TUBES,

ARTESIAN WELL PIPES,

of Wrought or Cast-Iron, screwed together, flush inside and out; Gas-works Castings, Retorts and Bench Castings for Coal Gas-works,; Cast-Iron Street Mains, Bends, Branches, Drips, &c.

Gas and Steam Fitters' Tools, &c.

Stephen Morris. Stephen P. M. Tasker.
Thomas T. Taskar, Jr. Henry G. Morris

Office and Warerooom, 15 Gold-street, New York.

J. VAUGHAN MERRICK, W. H. MERRICK,
JOHN E. COPE.

SOUTHWARK FOUNDRY,

FIFTH & WASHINGTON STREETS,

PHILADELPHIA.

MERRICK & SONS, Engineers,

MANUFACTURERS OF EVERY DESCRIPTION OF GAS MACHINERY.

Retorts, Bench Castings, Condensers, Washers, Scrubbers, Wet or Dry Lime Purifiers, Coke Wagons, Fire Tools, Wrought Iron Grate Bars, Gasholders, either Telescopic or Single, with Suspension Frames complete; Wrought Iron Roof Frames, for Iron or Slate; Stop Cocks, Exhausters, Steam Pumps, Boilers and Tanks, Steam or Hand Air Pumps for proving Street Mains, Centre Seals, Governors, Wrought or Cast-Iron, Line Sleves for Purifiers, Hoisting Machines for Lifting Purifier Covers.

Address— MERRICK & SONS,
5th and Washington Sts, Philadelphia.

S. FULTON & CO.,

(Successors to Colwell & Co.)

Manufacturers of

PIG IRON & CAST IRON GAS & WATER PIPES.

Also, Heavy & Light Castings of every description, No. 207 North Water street and 206 North Wharves, Philadelphia.

SAMUEL FULTON, THEO. TREWENDT

TO GAS COMPANIES.

THE UNDERSIGNED DESIRES TO undertake the supervision of several small Gas-works, to visit and examine them as often as may be necessary; to obtain and inspect their coal, castings, fire-brick, and other materials; and to manage their general business in such a manner that they shall be under such supervision as is now attainable in large works, at much increased cost. Also, to advise as general Consulting Engineer and expert in practical chemistry.

CHAS. M. CRESSON,
Late Asst. Engineer of the Philadelphia Gas-works
417 Walnut st., Philadelphia.

GEO. H. KITCHEN & CO.,

NEW PATENT

GAS APPARATUS

For Country Residences, Public Buildings, &c.,

FROM $300 UPWARDS.

EVERY DESCRIPTION OF GAS FIXTURES.

Gas Fitting in all its banches

591 Broadway,
NEW YORK.

THE WOODWARD

Steam Pump Manufacturing Company,

MNUFACTURERS OF THE WOODWARD PATENT IMPROVED

SAFETY STEAM PUMP,

—Adapted for Mining and Fire Purposes—and

Steam, Water & Gas Fittings of All Kinds.

Also, Wholesale and Retail Dealers in WROUGHT IRON PIPE, BOILER TUBES, etc.,

Woodward Building, 76 and 78 Centre Street,

corner of Worth street, formerly 77 Beekman Street. *New York.*

53 GEO. M. WOODWARD, Pres't. 64

OPPOSITION LINE.

TO CALIFORNIA VIA NICARAGUA

SAILING EVERY TWENTY DAYS,

with Passengers, Freight, and United States Mail on the following first class Steamships:

On the Atlantic Ocean.	On the Pacific Ocean.
Santiago De Cuba,	America.
San Francisco.	Moses Taylor.
Dakota.	Nevada.

PASSAGE AND FREIGHT AT REDUCED RATES.

Sailing days from New York. 1867.

February 20th, March 10th and 30th.
" April 20th, May 10th and 30th.

And so on at intervals of twenty days, leaving on the Saturday previous, when a regular sailing day comes on Sunday.

For further information, apply at the Company's office, 177 West-st., corner Warren-st., New York.

66tf D. N. CARRINGTON, Agt.

R. D. WOOD & CO.,

MANUFACTURERS OF

CAST-IRON PIPE, RETORTS, &c.

Office, 400 Chestnut Street, PHILADELPHIA.

FINKLE & LYON'S

New Family

SEWING MACHINE

Should be known in

IN EVERY TOWN.

To accomplish this at once and save the expense of a *Travelling Agent*, we offer thus, viz:

Any one sending us orders for two machines shall receive one machine free of charge. This proposition cannot avail after we have appointed a local agent in the town.

We have now completed our *new manufacture* at a cost of some $200,000—introducing *new patents*, and such important improvements, that without fear we are able to offer the following stringent guarantee, viz: After a fair trial, if any purchaser does not prefer the FINKLE & LYON FAMILY SEWING MACHINE to any other, he can return it and have back his money.

This machine has taken many of the HIGHEST PRIZES; *is less complicated than any other first class machine; does a wider range of work without changing; requires no taking apart to clean or oil, no "lessons" to set needle, regulate tension or operate machine.*

Our new Manufacturing Machine is sold on the same terms as the Family Machine.

Please send for a circular with samples of sewing.

Finkle & Lyon S. M. Co.

No. 531 BROADWAY, NEW YORK.

EXTINGUISHERS.

ALWAYS READY FOR INSTANT USE.

Portable Self-Acting Fire Engine.

No Building Safe Without Them.

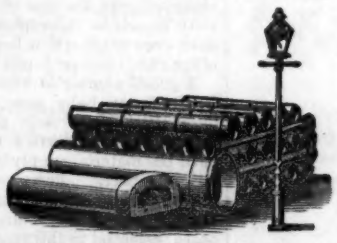
Price, $45, $50, $55.

☞ Send for Circular.

U. S. FIRE EXTINGUISHER CO.,
184] 8 Dey street, New York.

LOUISVILLE PIPE WORKS.

Dennis Long, Proprietor.



Cast Iron Gas and Water Pipe of All Sizes Always on Hand.

Retorts.

STOP-VALVES, AND ALL APPURTENANCES FOR EITHER GAS OR WATER WORKS.

All Pipe, &c., Made of the Very Latest Pattern and Improvements.

ALSO MANUFACTURER OF

Steamboat, Portable and Stationery

STEAM ENGINES.

Flour and Saw Mill Machinery—Portable Circular Saw Mills, Shafting, Pulleys, &c, &c.

186-1y DENNIS LONG,
Cor. 9th and Water streets, Louisville, Ky.

WIGHTMAN BROS.,

IMPORTERS AN

SOLE AGENTS

For the United States and Canada, of

SCHWARZ'S

GERMAN LAVA GAS-TIPS

And proprietors of Winchester's Improved

LAVA TIP GAS BURNERS,

No. 25 Kilby Street,

BOSTON, MASS.

T. G. ARNOLD,

MANUFACTURER OF

GAS-BURNERS,

And Importer of SCOTCH TIPS,

336 and 338 West 21st street,

formerly No. 447 BROOME ST., New York.

Mercury Cups, Portable Sockets, Burner Pillars, Burner Pliers, &c., &c.

C. GEFRORER,

Manufacturer of

GAS-BURNERS,

For Lighting and Heating Purposes.

GAS HEATING AND COOKING APPARATUS; FITTERS' PROVING APPARATUS, &c.

529 Commerce st., bet. Market & Arch, Philadelphia

NEW SYSTEM OF

VENTILATION,

BY

HENRY A. GOUGE.

☞ Pamphlets en. free. Address
Henry A. Gouge,
173 254 Broadway, New York.

EMPIRE LINE

FOR SAVANNAH, GA.

Every Saturday, the elegant Side-Wheel Steamships

SAN SALVADOR,
Commander, Joshua Atkins, and

SAN JACINTO,
Commander, Winslow Loveland.

Every SATURDAY, from pier 13 N. R.

Have been placed on the route to Savannah by the Atlantic Mail Steamship Company of New York, and are intended to be run by them in a manner to meet the first class requirements of the trade. The cabin accommodations of these ships are not excelled by any Steamers on the coast, and although their carrying capacity is large, their draught of water enables them to insure a passage without detention in the river

San Jacinto,	Saturday,	Oct.	6
San Salvador,	..	"	13
San Jacinto,	..	"	20
San Salvador,	..	"	27
San Jacinto	Saturday,	Nov.	3
San Salvador	..	"	10
San Jacinto	..	"	17
San Salvador,	..	"	24

Returning, leave Savannah every Saturday at 3 o'clock, P. M.

Bills of Lading furnished and signed on the Pier.

For further particulars, engagement of Freight or passage, apply to

GARRISON & ALLEN, Agents,
No. 5 Bowling Green.
Agent at Savannah, B. H. HARDEE.

NEW PATENT

Pianos.

RAVEN & BACON.

(Established 1829.)

Warerooms Nos. 644 & 646 Broadway, N. Y.

Manufacturers of Piano Fortes, with their Patent Combination Sounding-boards,

PATENTED AUGUST 14th, 1866.

This invention, introduced exclusively into our Pianos, is of the greatest advantage to the tone of the Instrument, as it affects the sounding-board the very soul of the Piano, and produces thereby a pure liquid tone greatly superior in quality and power to that of the ordinary Piano. The sounding-board released from its connection with the Piano case, and resting upon under sounding-boards, is relieved from the rigidity caused by such connection, and its vibratory quality increased. Our Pianos are first class in every respect, and purchasers will have not only our own guarantee as to their quality, but also the guarantee of the reputation of the instrument, obtained from the experience of our patrons who have used them for a generation. All lovers of this eminently household instrument, as well as parties proposing to purchase new Pianos, are invited to call and examine our assortment. 96-1y

---

IMPROVEMENT IN GAS ILLUMINATION.—It was some time since proposed to substitute for the ordinary gas-light the more intense Drummond light, which is produced by introducing a piece of quicklime or magnesia into the flame of a mixture of oxygen and street gas. The effect thus obtained surpass those of the latter so considerably that most persons felt that all that was required to permit of this principle of lighting was the introduction of a cheap process of obtaining oxygen gas. Mr. Bourbouze, however, has now constructed an apparatus which does away entirely with the preparation of oxygen, affording at the same time great economy in regard to the quantity of gas employed. The former is substituted by atmospheric air, the practical arrangement for effecting the combustion being the following: The gases are admitted into one common tube; from thence they pass through a sheet of metal perforated with a great many holes, in order to be divided into many small jets; these are delivered through a gauze of platinum wire, when they are lighted. This metal, in being heated, soon becomes red, then white, and thus diffuses a dazzling light.

Patent Lamps.

In our issue of May 16th we gave illustrations of lamps invented and for sale by Messrs Julius Ives & Co. Herewith is another illustration of a pendant lamp. It represents a hall lamp, well finished and complete in every particular, having not only the improvements peculiar to all the company's lamps, but the burner is fitted with cog-wheels by which the flame may be regulated or extinguished by the knob from the outside, without opening or lowering the lower part of the lamp.

We have thus endeavored to show that the general features of Messrs. Julius Ives and Co.'s lamps are not

peculiar so far as respects their burning, yet the improved principles upon which they are constructed are claimed by the inventor as new, original, and important, on account of the undoubted advantages over the old methods for using petroleum, and for enjoying to the fullest extent its illuminating qualities. The extensive show and sales rooms of the Messrs. Ives & Co. are at 20 Maiden Lane, New York City, where an extensive assortment of every description of lamps can be seen, examined and admired.

—Artificial meerschaum, as we learn from M. Holdman, in the *Chemical News*, is prepared by mixing 100 parts of silicate of soda at 35° (we presume a solution at 35° Baume) with sixty parts of carbonate of magnesia and 80 parts of native meerschaum, or of pure alumina. This mixture is carefully pulverized and finely sifted, boiled with water and put into porous moulds.

—As a substitute for the ordinary crystals or glasses of the spectacles worn by workmen in various trades to protect their eyes from injury by the glare of heated masses or flying particles, it has been proposed to use mica, as being less liable to injury or breakage, and as affording a softer or more agreeable protection to the eyes.

Negative Fluorescence and Phosphorescence.

In the *Philosophical Magazine* for August, 1867, we find a translation of a paper on the above subject, published in the *Annalen* by Professor O. Bohn.

The subject discussed is the propriety of clarifying *calorescent* phenomena, such as those exhibited by Tyndall in his late lectures on radiation, *i. e.*, the rendering luminous platinum foil by invisible rays of heat, with those of fluorescence, etc.

Fluorescence, as is well known, is a change in the refrangibility of luminous rays effected by certain bodies which, receiving more refrangible rays, emit them again with reduced refrangibility, or, in other words, with a slower rate of vibration.

Now, it is stated by Tyndall and others, the action of calorescence, above described, is identical in character with this, though opposite in direction, being an increase of the refrangibility or rate of vibration, and they have therefore described it as a negative fluorescence.

This conclusion the author of the above paper combats on various grounds, and maintains that all such developments of luminous rays from non-luminous, are but the direct consequence of rise of temperature. Among the earliest instances of negative fluorescence observed, was the case of fluorspar, especially the variety known as chlorophane, which, when placed in a dark oven or otherwise heated below the ordinary point of ignition, becomes luminous.

A great number of experiments made and recorded by Professor Bohn seem, however, to show that this luminosity is the result simply of a slow combustion, inaugurated at a certain temperature, and continuing until the material supplying it is exhausted, this material re-collecting, however, after a sufficient period of repose. These experiments likewise prove that insolation or exposure to sunlight is not, as heretofore supposed, essential to this recovery of luminous properties.

The account of experiments and deductions therefrom in the paper under consideration is very long, and would need much space even for an abstract; we must therefore content ourselves with remarking that the proposition stated at the outset is very fully maintained, and that it is pretty clearly proved that no known phenomenon can lay just claim to the title of "negative fluorescence," as above defined.—*Journal of the Franklin Institute, Nov.* 1867.

Advertising Index.

☞ In looking for advertisements, see figures 1 to 9, within brackets, at head of advertisement pages.

GAS-BURNERS, APPARATUS, ETC.

Arnold's Metallic Gas Trays—T. G. Arnold, 334 and 336 West 21st street, N. Y. 2
American Meter Company, 512 West 22d street, New York 6
Automatic Gas Purifier—State Rights for sale—Wm. C. Turnbull, care of T. C. Babcock, 59 Broadway, or office of the American Gas-Light Journal 2
Builder of Gas Works, Apparatus, Etc.—P. P. Delly, 39 Laurel street, Philadelphia 2
Contractors for Gas-works, Etc.—Murray, Baker & Walker, Fort Wayne, Ind 2
Cambridge Gas Stoves, Ranges, &c.—Gas Light Journal Offices, 3
Gas Coals—Bird, Perkins & Job, 104 Wall street, New York 4
Gas Engineers and Contractors—Hoy, Kennedy & Co., 111 Liberty street, New York 4
Gas-Burners—C. Gefrorer, 529 Commerce street, Philadelphia, Pa 9
Gas Meter Manufacturers—Harris & Bro., 1117 Cherry street, Philadelphia, Pa 6
Gas Superintendent—D. M. Cresson, 417 Walnut st., Phil., Pa. 9
Gas Apparatus, &c.—Geo. H. Kitchen & Co., 561 Broadway 9
Gas Burners—Wightman Bros., 25 Kilby st., Boston, Mass. 9
Gas Burners—T. G. Arnold, 224 and 226 West 21st st., N. Y. 9
Gas Burners—W. Anderson, cor Franklin & Elm sts., N. Y. 8
Gas Works for Sale—Colonel J. A. Sabbaton, Manhattan Gas Works, N. Y. 8
Gas Stoves—A. L. Bogart, 792 Broadway 7
Gas Fixtures, Meters, Etc., Etc.,—McHenry & Carson, Cincinnati, Ohio 4
Gas Fixtures & Chandeliers—Alfred Bliss & Co., 95 Bleecker-st., New York 2
Gasometers, Etc—George Stacey & Co. Cincinnati, O. 1
Gasoleine,—J. W. Wheelock, 284 Pearl st., New York 4
Haskins' Gas Stoves—Ford & Murray, 29 East 18th street 8
Plumbers, Gas and Steam Fitters—Moore & Gaussen, 221 West Fifth street, Cincinnati, O. 6
Patent Gas Exhauster—Smith & Sayre, 484 Broadway 5
Purifying Trays—Jno. L Cheeseman, 147 and 149 Ave. C, N.Y. 2
Robbins' Patent Joint for Gas and Water Pipes 4
Solar Gas Machines—W. S. Drake, 18 Dey street 1
Stanley's Hydraulic Main, Etc.—L. F. Whiting, Boston 1

FOUNDRIES.

Brooklyn Tube Works—B T. Benton, Brooklyn 7
Bergen Iron Works—Driving Pipes and Bands—R. A. Brick, 109 Leonard street, N. Y. 7
Columbian Iron Works—Wm. Taylor & Sons, 11, 13 and 15 Adams street, Brooklyn, N. Y. 6
Cast Iron Pipes and Fittings—B S. Benson, 52 East Monument street, Baltimore, Md. 1
Continental Works—T. F. Rowland, Greenpoint 1
Dealers in Iron, Copper, Brass, etc.—T. Cassidy & Co., corner of Bridge and John streets, Brooklyn, N. Y. 4
Erie Basin Iron Works—Elizabeth, Dwight and Van Dyke sts., South Brooklyn, N. Y. 5, 6
Gaylord's Great Western Pipe Foundry—Office 90 and 92 Broadway, Cincinnati, Ohio 8
Louisville Pipe Works—Dennis Long, Cor. 9th and Water-sts., Louisville, Ky. 9
Manufacturing Enamelers—Nessle & Taylor, 97 Water street, Brooklyn, N. Y.
National Foundry and Pipe Works—Wm. Smith, Carroll, Pike, Smallman and Wilkins streets, Pittsburgh, Pa. 7
Oregon Iron Foundry—Herring & Floyd, 738, 740, 742 and 744 Greenwich street, New York 6
Pascal Iron Works—Morris, Taskar & Co., Philadelphia, Pa. 9
Southwark Foundry—Merrick & Sons, Fifth and Washington streets, Philadelphia 9
Wrought Iron Pipes, etc.—Joseph Nason & Co., 61 Beekman street, New York 4

WATER METERS, PUMPS, ETC.

Ashcroft's Low-water Detector, 50 John street, New York 8
Aubin Water Meter—H. Q. Hawley, Albany, N. Y. 6, 9
Babcock & Wilcox's Stationary Steam Engines 8
Davis' Steam Superheating Boiler—Duplex Steam Boiler Mf'g Company, Long Island City, N. Y. 9
Gaylord's Patent Couplings—Gaylord Patent Coupling Co., 31 and 33 Dey street, N. Y. 7
Pat. Lead-Encased Tin Pipes—Colwells, Shaw & Willard, foot of West 27th street, N. Y. 6
Patent Dry Centre Valve—American Meter Company, 512 West 22d street New York 5
Steam Pump—H. R. Worthington, 61 Beekman st. New York 6
Water Pipes, etc.—S. Fulton & Co. 207 North Water st Phila. 9
Water Closets, etc.—Wm. S. Carr & Co. 149, 151, 153, 155, 157 Centre street, New York 4
Water and Sewerage Pipes—Am. Water and Gas Pipe Company northwest corner of Green and Bay sts., Jersey City, N. J. 5
Worthington's Water Meters—H. R. Worthington, 61 Beekman street, New York 2
Woodward Steam Pump Mf'g Co. 76, 78 Centre st. New York 9

CLAY RETORT WORKS.

Bay State Clay Retort Works, 125, 127 Water st. Boston, Mass. 6
Brooklyn Clay Retort Works, Van Dyke st. Brooklyn, N. Y. 5
Clay Retorts, Tiles, etc.—J. H. Gautier & Co. Jersey City, N. J. 5
Laciede Fire Brick Works, 1007 North Levee, St. Louis, Mo. 6
Manhattan Clay Retort Works, 15th st. near Av. C, New York 5
New York " " 56 Goerck street, New York 5
Philadelphia Fire Brick Works, Vine and 23d sts. Philadelphia 5
Retorts, Pipes, &c.—R. D. Wood & Co., 400 Chestnut street, Philadelphia 9

MINING MACHINERY, ETC.

Broker in Mining Stocks—C. H. Smith 53½ Pine st. New York 4
Industrial Chemistry—Prof. H. Dussauce, New Lebanon, N. Y. 2
Mining Engineer—J. H. Tiemann, 240 Pearl st. New York 4
Sodium Amalgam &c.—Prof. Wurtz, 26 Pine st., New York. 6
School of Mines, Columbia College, East 49th st. " 2
J. S. Phillips, Mining Engineer, Wadsworth House, San Francisco, Cal. 8

LAMPS, STOVES, PETROLEUM, ETC.

Chimney Top—C. H. Reichmann, 45 Fulton st. " 7
Lamps—F. H. Lovell & Co 233 Pearl street, New York 7
Paraffine Oil—G. H. Bronson, 132 Maiden Lane New York. 4
Street Lamps—J. G. Miner, Morrisania, Westchester Co., N.Y. 2
Lamps, &c.,—Julius Ives & Co., 49 Maiden Lane, N. Y. 1

MISCELLANEOUS.

A Rare Opportunity for Investment—Offices of this Journal. 2
Apparatus For Sale—Washington (D. C.) Gas Company 6
Bird Cages—Osborn Manufacturing Company, 109 Bleecker st. 8
Cameron Coal Company—42 Broadway 1
Despard Coal 1
Empire S. S. Line for Savannah, Garrison & Allen, 5 Bowling Green 9
Empire Sewing Machine Company, 294 Bowery 3
Fire Extinguisher—U. S. Fire Extinguisher Co., 8 Dey street. 9
Finkle & Lyon Sewing Machine Company, 531 Broadway 9
Gas-Light Journal American and Foreign Patent Agency 1
Opposition S. S. Line to California—177 West st., cor. Warren. 9
Prince's Metallic Paint—D. Sloan & Co. 115 Liberty street. 5
Plastic Slate Roofing Co. 157 Broadway 7
Pianos—Raven & Bacon, 644 and 646 Broadway, N. Y. 9
Prospectus of the Literary Journal of Science and Art 1
Partner Wanted—Wm. Bent, Medina, Orange County, N. Y. 1
Roofing Materials—E. Van Orden & Co. 41 Liberty st. 4
Rubber Goods—O. B. Gray, 201 Broadway 4
Smedberg's "Synopsis of Gas-Lighting" 6
Situation Wanted as Manager of a Gas Work 2
Steam Cooking Apparatus—Bennett, Johnson & Co., 42 Dey st., New York 6
Sabbaton's Patent Screening Shovels—A. T. Smithe, No. 126 Maiden Lane, New York city 8
Situation as Superintendent Wanted—Sup't Office G. L. Jour. 2
Situation as Manager Wanted—G. B. Dunne, 46 Amity-st N Y. 1
Treatise on the Manufacture of Gas—D. Van Nostrand, 192 Broadway, New York. 8
Ventilation—Henry A. Gouge, 234 Broadway 6
Watches—T. B. Bynner 189 Broadway 2
Works on the Manufacture of Gas—D. Van Nostrand, 192 Broadway, New York. 3

THE AMERICAN GAS LIGHT JOURNAL.

is published at No. 22 Pine Street, opposite the Sub-Treasury Building on the 2d and 16th of every month, and is a recognized official organ of—

LIGHT, HEAT MINING INTERESTS.

PETROLEUM, WATER-SUPPLY, AND

SCIENTIFIC SUBJECTS GENERALLY.

TERMS.

Subscription—Three dollars per annum in advance.

Advertisements.—One dollar per inch in column for each insertion inside. Outside and editorial page $2.00 per inch Large space or long time by special contract. Payable in advance.

☞ No Advertisement less than $2 00.

AGENTS

New York—American News Company, 119 and 121 Nassau street
Boston—S. M. Pettengill & Co., No. 6 State Street.
Philadelphia—Coe, Wetherill & Co., No. 441 Chestnut street, corner of 5th.
Germany.... B. Westermann & Co., of New York.
Great Britain....Trubner & Co., 60 Paternoster Row, London
France.... Le Journal de l'Eclairage au Gaz, 25 Boulevard Poissonnière
Brussels, Belgium—Henri Berge.

☞ All communications to be addressed to "The Editors," No. 22 Pine Street, New York.

AUG. 8, 1868.